



Tủ sách ViOlympic

PHẠM THỊ LA - ĐẶNG MINH TUẤN

ViOlympic

Tự luyện

TOÁN BẢNG TIẾNG ANH *Math liolympic*

Lớp

7



NHÀ XUẤT BẢN GIÁO DỤC VIỆT NAM

PHẠM THỊ LA - ĐẶNG MINH TUẤN

TỦ SÁCH VIOLYMPIC

TỰ LUYỆN
VIOLYMPIC TOÁN
BẰNG TIẾNG ANH

LỚP 7

NHÀ XUẤT BẢN GIÁO DỤC VIỆT NAM

Ngày 15/12/2017

Đã nhận được

1000 đồng

1000 đồng

1000 đồng

PREFACE

Dear beloved students!

The math contest via Internet (ViOlympic) is the national contest organized by the Ministry of Education and Training and implemented by the FPT Group, FPT University since the 2008 – 2009 academic year. Since the 2013 – 2014 academic year, the Math ViOlympic in English has been organized with 10 rounds. Rounds 1-6 are for self-study, and rounds 7-10 are for grade contests.

In order to help students familiarize with the fascinating test formats, stimulate thinking and practise tests on computer before the competitions, the Content Sub-committee – National Organizing Committee has compiled the book “Self-study for Math ViOlympic in English”. This volume consists of 9 books for grades 1 to 9, each of which comprises 10 rounds corresponding to 10 rounds presented on the website *math.violympic.vn*. Each round is consistent with three-week curriculum of the Ministry of Education and Training.

When finishing each round in this book, students can access *math.violympic.vn* to register for the contest. Once logging on this page, students should read carefully the *Guide* section and follow the instructions to get the best score.

We would like to thank the Nation Books Joint Stock Company – Vietnam Education Publishing House for publishing the books for students.

Any comments and recommendations for authors should be sent to email address *violympic@moet.edu.vn* or postal mailing address *ViOlympic Department, FPT Polytechnic Building – Ham Nghi – My Dinh – Nam Tu Liem – Hanoi*

We hope students will feel more passionate about Mathematics, make further progress and earn top honours in ViOlympic competitions as well as at school.

AUTHORS

LỜI NÓI ĐẦU

Các em học sinh yêu quý!

Cuộc thi giải toán qua Internet (ViOlympic) là cuộc thi cấp Quốc gia do Bộ Giáo dục và Đào tạo tổ chức, Tập đoàn FPT, Trường Đại học FPT thực hiện, bắt đầu từ năm học 2008 – 2009. Từ năm học 2013 – 2014, ban tổ chức mở thêm cuộc thi giải Toán bằng Tiếng Anh VIOlympic với 10 vòng thi, từ vòng thi số 1 đến số 6 là vòng thi tự luyện, từ vòng thi số 7 đến vòng thi số 10 là vòng thi các cấp.

Để học sinh làm quen với dạng bài thi hấp dẫn, kích thích tư duy và luyện tập trước khi thi trên máy tính, Tiểu ban nội dung của Ban tổ chức cấp Quốc gia biên soạn bộ sách "Tự luyện VIOlympic Toán bằng Tiếng Anh". Bộ sách này gồm 9 cuốn dành cho các lớp từ 1 đến 9, mỗi lớp có một tập với cấu trúc 10 vòng thi tương ứng với 10 vòng thi trên trang *math.violympic.vn*, mỗi vòng thi tương ứng với ba tuần học theo phân phối chương trình của Bộ Giáo dục và Đào tạo.

Khi làm xong mỗi vòng thi trong cuốn sách này, các em có thể truy cập Internet, vào địa chỉ: *math.violympic.vn* để dự thi. Khi vào trang này, các em cần đọc kỹ phần *Trợ giúp* và làm theo hướng dẫn để có thể thi tốt.

Cảm ơn Công ty Cổ phần Sách dân tộc – Nhà xuất bản Giáo dục Việt Nam đã tạo điều kiện để cuốn sách tới được các em.

Các em hãy gửi các ý kiến góp ý cho các tác giả qua hòm thư điện tử: *violympic@moet.edu.vn* hoặc gửi qua bưu điện về địa chỉ: Phòng VIOlympic, Trường Đại học FPT, số 8 Tôn Thất Thuyết – Mỹ Đình – Từ Liêm – Hà Nội.

Chúc các em học môn Toán ngày càng say mê hơn, tiến bộ hơn và đạt kết quả cao nhất trong cuộc thi VIOlympic cũng như trong học tập.

CÁC TÁC GIẢ

INSTRUCTIONS

I. General instruction

"Self-study for 7th Grade Math ViOlympic in English" covers 10 rounds. From round 1 to round 8, each round consists of 2 tests with 3 exams. Each round from 9 to 10 consists of one test.

Students should read the instructions carefully to determine the questions of each test. For "Choose the correct answer", "Complete results on ...", "Overcome obstacles", "Golden Frog", "Kid Champion", students write answers directly on the questions.

In section II below, specific instructions of some complex test formats are given.

II. Specific instructions of some test formats

1. Matching



Example: Find the equal pairs of values in the table below.

417 + 168 (1)	172 + 465 (2)	453 + 374 (3)	237 + 415 (4)
380 + 272 (5)	813 (6)	392 + 193 (7)	555 + 209 (8)
637 (9)	519 + 308 (10)	475 + 354 (11)	518 + 318 (12)
583 + 246 (13)	452 + 361 (14)	464 + 372 (15)	764 (16)
481 + 373 (17)	680 + 182 (18)	862 (19)	528 + 326 (20)

Step 1: Calculate the value of each cell.

Step 2: Compare the calculated values.

Cell No. 1 and Cell No. 7 have the same value of 585,... so:

- Cell No. 1 and Cell No. 7 is an equal pair.
- Cell No. 2 and Cell No. 9 is an equal pair.
- Cell No. 5 and Cell No. 4 is an equal pair.
- Cell No. 6 and Cell No. 14 is an equal pair.
- Cell No. 8 and Cell No. 16 is an equal pair.
- Cell No. 10 and Cell No. 3 is an equal pair.
- Cell No. 12 and Cell No. 15 is an equal pair.
- Cell No. 13 and Cell No. 11 is an equal pair.
- Cell No. 17 and Cell No. 20 is an equal pair.
- Cell No. 18 and Cell No. 19 is an equal pair.

Step 3: Write the answers:

1 and 7; 2 and 9; 5 and 4; 6 and 14; 8 and 16;

10 and 3; 13 and 11; 12 and 15; 17 and 20; 18 and 19.

2. Arrangement



Example: Write the cell numbers in the table below with ascending order based on the values.

296	963	507	125×3
1	2	3	4
$476 + 455$	198	839	649
5	6	7	8
851	468	204×3	886
9	10	11	12
589	$393 + 393$	936	$130 \times 2 + 330$
13	14	15	16
$707 - 38$	439×2	729	$458 + 528$
17	18	19	20

Step 1: Calculate the values and compare:

$$\begin{aligned} 198 < 296 < 125 \times 3 = 375 < 468 < 507 < 589 < 130 \times 2 + 330 = 590 < 204 \times 3 \\ = 612 < 649 < 707 - 38 = 669 < 729 < 393 + 393 = 786 < 839 < 851 < 439 \times 2 \\ = 878 < 886 < 476 + 455 = 931 < 936 < 963 < 458 + 528 = 986. \end{aligned}$$

Step 2: After comparing, write the numbers of cells with ascending order as follows:

$$(6) - (1) - (4) - (10) - (3) - (13) - (16) - (11) - (8) - (17)$$

$$- (19) - (14) - (7) - (9) - (18) - (12) - (5) - (15) - (2) - (20)$$

PART I. PRACTICAL TESTS

ROUND 1

TEST 1

EXAM 1

ARRANGEMENT

Arrange numbers or calculations in order from least to greatest then fill their sequence numbers in ○ below.



$\frac{-9}{15}$ (1)	$\frac{-5}{9} + 2 + \frac{-8}{9}$ (2)	$-7 : 6$ (3)	The value of x satisfies $70\%x + \frac{1}{2}x = \frac{12^2}{5^2}$ (4)
The positive value of x satisfies $ x - \frac{1}{3} = 2\frac{1}{6}$ (5)	The value of x satisfies $x + \frac{1}{5} = \frac{13}{15}$ (6)	$\frac{-28}{35}$ (7)	$\frac{5}{2} - \frac{10}{5}$ (8)
$\frac{-15}{20}$ (9)	-0.5 (10)	The value of x satisfies $-3\left(x + \frac{1}{2}\right) + 5\left(x - \frac{16}{25}\right)$ (11)	$\frac{-4}{15} \times \frac{3}{2}$ (12)
The value of x satisfies $x - \frac{4}{7} = 1\frac{2}{21}$ (13)	$1\frac{1}{30} + 2\frac{1}{42} + 3\frac{1}{56}$ (14)	The value of x satisfies $\frac{1}{3}x + \frac{7}{4} = 2\frac{5}{12}$ (15)	$\frac{-7}{15} : \frac{7}{3}$ (16)
$\frac{4}{7} + \frac{12}{11} + \frac{20}{13}$ $\frac{1}{7} + \frac{3}{11} + \frac{5}{13}$ (17)	$\frac{-1}{5} + \frac{-1}{10}$ (18)	100% (19)	The value of x satisfies $x + \frac{1}{2} = \frac{11}{6}$ (20)

The correct order is:

○ → ○ → ○ → ○ → ○ → ○ → ○ → ○ → ○ → ○

○ ← ○ ← ○ ← ○ ← ○ ← ○ ← ○ ← ○ ← ○ ← ○

Choose the correct answer in 4 options.



Question 1. The fraction $\frac{13}{91}$ is equal to ...

(A) $\frac{1}{7}$

(B) $\frac{1}{3}$

(C) $\frac{1}{91}$

(D) $\frac{1}{9}$

Question 2. The fraction $\frac{5 \times 81}{72 \times 15}$ is equal to ...

(A) $\frac{8}{7}$

(B) $\frac{1}{3}$

(C) $\frac{3}{8}$

(D) $\frac{5}{6}$

Question 3. The value of x such that $x + \frac{7}{12} = \frac{1}{4}$ is...

(A) $\frac{5}{6}$

(B) $-\frac{1}{3}$

(C) $\frac{1}{3}$

(D) $-\frac{5}{6}$

Question 4. The value of x such that $\frac{8}{9} - x = \frac{1}{3}$ is ...

(A) $\frac{5}{9}$

(B) $\frac{11}{9}$

(C) $-\frac{5}{9}$

(D) $-\frac{11}{9}$

Question 5. Find the integer number x such that $-\frac{7}{12} \leq \frac{x}{6} \leq -\frac{1}{3}$.

Answer: $x = \dots$

(A) 3

(B) -3

(C) -4

(D) -5

Question 6. Suppose that $\frac{2}{3}$ of x is equal to $\frac{7}{9}$. The value of x is ...

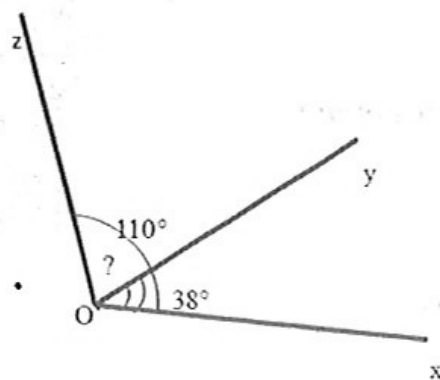
(A) $1\frac{1}{6}$

(B) $\frac{14}{27}$

(C) $\frac{6}{7}$

(D) $1\frac{13}{14}$

Question 7.



Note: Figure is not drawn to scale.

If $\widehat{xOz} = 110^\circ$ then $\widehat{yOz} = \dots^\circ$.

- Ⓐ 38 Ⓑ 148 Ⓒ 110 Ⓓ 72

Question 8. The value of x such that $(x-3) + \left(7\frac{3}{11} - 4\frac{3}{11}\right) = 5$ is ...

- Ⓐ 8 Ⓑ $\frac{52}{11}$ Ⓒ $8\frac{3}{11}$ Ⓓ 5

Question 9. Calculate: $P = \frac{1}{2} + \frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \frac{1}{30} + \frac{1}{42} + \frac{1}{56} + \frac{1}{72} + \frac{1}{90}$.

- Ⓐ $\frac{9}{10}$ Ⓑ 1 Ⓒ $\frac{10}{9}$ Ⓓ $\frac{1}{2}$

Question 10. The value of x such that $\left(-1\frac{1}{2}\right)\left(-1\frac{1}{3}\right)\left(-1\frac{1}{4}\right)\dots\left(-1\frac{1}{9}\right)^x = 5$ is ...

- Ⓐ 1 Ⓑ $\frac{1}{2}$ Ⓒ $\frac{2}{5}$ Ⓓ 2

EXAM 3 **GRID INS**

Fill in the blanks with the correct answers to answer 10 questions below.



Question 1. The value of $\frac{2 \times 3 \times 4 \times 5}{5 \times 8 \times 10 \times 12}$ is ...

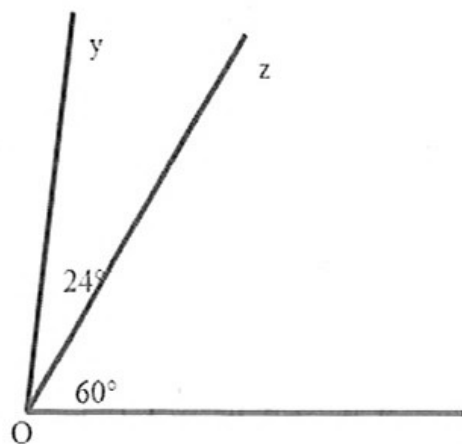
(Write your answer as a decimal in the simplest form.)

Question 2. The value of x satisfying $x - \frac{5}{4} = \frac{1}{2}$ is ...

(Write your answer as a decimal in the simplest form.)

Question 3. The value of $\frac{1}{3} - \frac{2}{5} + \frac{2}{3} + \frac{7}{5}$ is ...

Question 4.



Note: Figure is not drawn to scale.

Find the measure of the angle xOy .

Answer: $\widehat{xOy} = \dots^\circ$.

Question 5. The positive value of x satisfying $|3x - 5| = 7$ is ...

Question 6. The value of $3\left(\frac{1}{7} - \frac{3}{21} + \frac{7}{3}\right)$ is ...

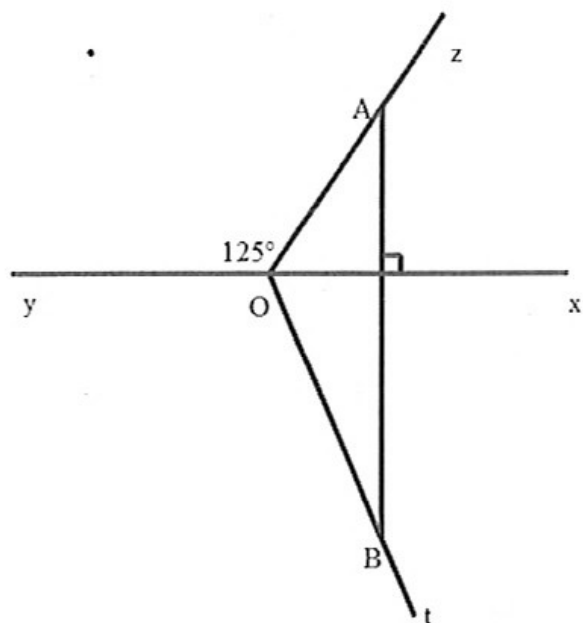
Question 7. The value of $\frac{9}{7} \times \frac{5}{13} + \frac{8}{13} \times \frac{9}{7} - \frac{2}{7}$ is ...

Question 8. The sum of the values of x satisfying $|x - 3| < 2$ is ...

Question 9. Find the value of x such that $\left(\frac{1}{2} + \frac{1}{6} + \frac{1}{12} + \frac{1}{20}\right)x - \frac{1}{3} = \frac{19}{15}$.

Answer: $x = \dots$

Question 10.



Note: Figure is not drawn to scale.

Suppose that $\widehat{zOt} = 123^\circ$, then $\widehat{tOx} = \dots^\circ$.

TEST 2

EXAM 1

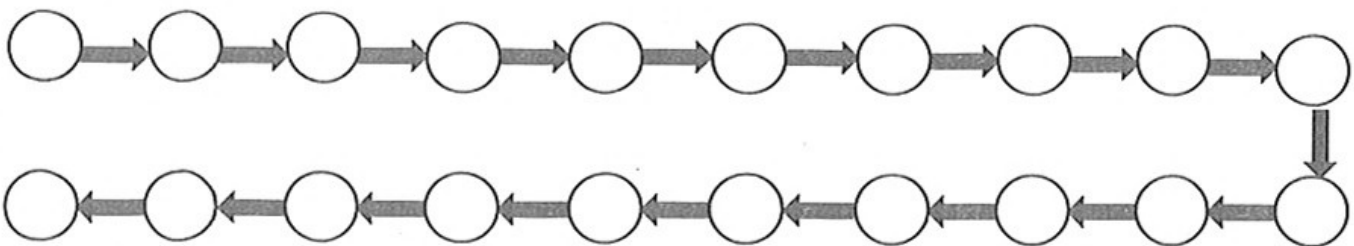
ARRANGEMENT

Arrange numbers or calculations in order from least to greatest then fill their sequence numbers in ○ below.



$\frac{13}{5} + 1\frac{2}{3} - 1\frac{4}{15}$	The positive value of x such that $ 2x + 3 + 1 = 11$	$\frac{7}{9} - \frac{1}{4} + \frac{5}{36}$	$-\frac{6}{7}$
1	2	3	4
$\frac{3^4 - 7 \times 3^2}{5}$	The value of x satisfies $2x - \frac{7}{3} = -\frac{1}{3}$	$-12 : 15$	The value of x such that $\frac{3}{2}\left(\frac{x}{5} - \frac{7}{15}\right) - \frac{2}{5} = \frac{3}{4}\left(\frac{x}{5} - \frac{7}{15}\right)$
5	6	7	8
$-\frac{3}{4}$	The positive value of x satisfies $ 3x + 7 + 2 = 13$	$-\frac{6}{5} \times \frac{1}{2}$	$-\frac{5}{10}$
9	10	11	12
The value of x such that $4x + 7 = 9$	The value of x satisfies $\frac{x}{7} + 1\frac{2}{3} = 1\frac{20}{21}$	$4 + \frac{\frac{1}{3} + \frac{2}{7} - \frac{3}{11}}{\frac{5}{3} - \frac{15}{11} + \frac{10}{7}}$	$\left(1 + \frac{1}{2}\right)\left(1 + \frac{1}{3}\right) \dots \left(1 + \frac{1}{13}\right)$
13	14	15	16
-0.17	$1\frac{3}{4} + 2\frac{2}{5} - 1\frac{9}{10}$	$-\frac{1}{30} + \frac{-5}{30} + \frac{3}{15}$	The value of x satisfies $\frac{2}{3}x - \frac{3}{7} = 1\frac{5}{21}$
17	18	19	20

The correct order is:



EXAM 2

GOLDEN FROG

Choose the correct answer in 4 options.



Question 1. The value of x satisfying $20\%x + \frac{7}{10} = \frac{1}{15}$ is ...

- (A) $\frac{19}{6}$ (B) $-3\frac{1}{6}$ (C) $3\frac{5}{6}$ (D) $3\frac{1}{6}$

Question 2. Given $P = \frac{5}{x-3}$. The value of P at $x = 5$ is ...

- (A) 1 (B) $-\frac{2}{3}$ (C) $\frac{5}{2}$ (D) $-\frac{5}{2}$

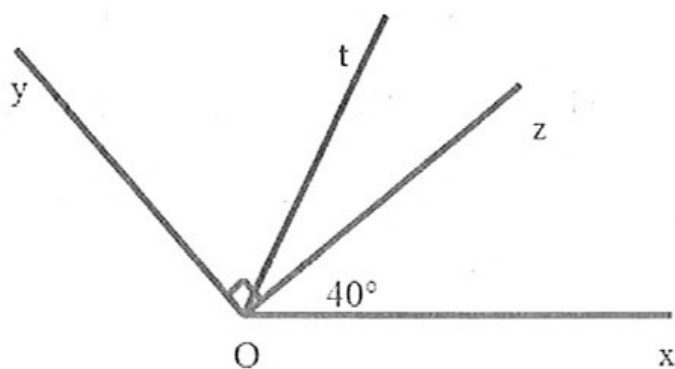
Question 3. The value of $\frac{121212}{363636}$ is ...

- (A) $\frac{1}{3}$ (B) $\frac{1}{6}$ (C) $\frac{2}{3}$ (D) $\frac{2}{63}$

Question 4. The value of x such that $\frac{x}{5} + \frac{1}{3} = \frac{-1}{15}$ is ...

- (A) 2 (B) $\frac{4}{3}$ (C) $\frac{3}{4}$ (D) -2

Question 5.



Note: Figure is not drawn to scale.

If Ot is the bisector of the angle xOy then $\widehat{xOt} = \dots^\circ$.

- (A) 85 (B) 60 (C) 65 (D) 45

Question 6. The values of x satisfying $|x-1| < 2$ and $x \in \mathbb{Z}$ are ...

(A) $-2; -1; 0$

(B) $-1; 0; 1; 2; 3$

(C) $-1; 0; 1; 2$

(D) $0; 1; 2$

Question 7. The values of x such that $|-x+7|-8=-3$ are ...

(A) -2 and -12

(B) 2 and 12

(C) 2 and -12

(D) -2 and 12

Question 8. The value of x such that $1\frac{1}{4}x + 15\%x = \frac{7}{15}$ is ...

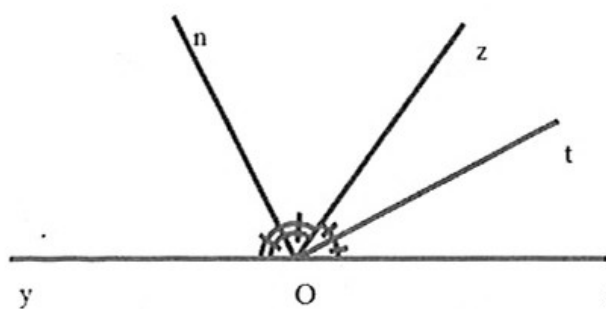
(A) 3

(B) $\frac{15}{7}$

(C) $\frac{1}{3}$

(D) $\frac{7}{3}$

Question 9.



Note: Figure is not drawn to scale.

Suppose that $\widehat{xOz} = 57^\circ$, then $\widehat{tOn} = \dots^\circ$.

(A) 80

(B) 90

(C) 57

(D) 60

Question 10. The value of x satisfying $(1+3+\dots+99)x = 2+4+\dots+100$ is ...

(A) $\frac{51}{50}$

(B) $\frac{50}{51}$

(C) 1

(D) $\frac{4}{5}$

EXAM 3 **GRID INS**

Fill in the blanks with the correct answers to answer 10 questions below.



Question 1. The value of $\frac{5^3 \times 9^4}{25 \times 3^7}$ is ...

Question 2. Find the value of x such that $1\frac{4}{5} : x + \frac{1}{3} = \frac{6}{15}$.

Answer: $x = \dots$

Question 3. The value of x satisfying $0.75x + \frac{5}{6}x = 1\frac{7}{12}$ is ...

Question 4. Find the negative value of x such that $11|x| - 2\frac{2}{5} = 8\frac{3}{5}$.

Answer: $x = \dots$

Question 5. The value of $\frac{5}{11} \times \frac{7}{13} + \frac{5}{11} \times \frac{6}{13} + \frac{6}{11}$ is ...

Question 6. The product of all values of x satisfying $|x - 1| < 2$ is ...

Question 7. Given a rectangle land and its length is $\frac{3}{4}$ km. If its width is $\frac{1}{12}$ km

shorter than its length then find the area of this land.

Answer: The area of this land is $\dots \text{km}^2$.

(Write your answer as a decimal in the simplest form.)

Question 8. Find the integer number x satisfying

$$\frac{1}{2}\left(\frac{1}{2} + \frac{3}{4} - \frac{1}{3}\right) < \frac{x}{2} < \frac{13}{8}\left(\frac{1}{2} - \frac{1}{6}\right).$$

Answer: $x = \dots$

Question 9. Find the values of x and y such that $x - y = 13$; $\frac{3}{10}x = \frac{9}{4}y$.

Answer: $x = \dots$; $y = \dots$

Question 10. The value of $\frac{14}{3} \times \left(\frac{3^2}{10} + \frac{3^2}{40} + \frac{3^2}{88} + \frac{3^2}{154} \right)$ is ...

ROUND 2

TEST 1

EXAM 1

MATCHING

Choose pairs of numbers or calculations which have the same value in the following table cells then fill their sequence number in below.



$\frac{3}{-5}$ (1)	$\frac{-2}{3} + \frac{5}{7}$ (2)	$\frac{13}{11} - \frac{3}{2}$ (3)	$\frac{5}{11} \div \frac{7}{22}$ (4)
$\frac{11}{12} \div \left(-3 - 2\frac{1}{2}\right)$ (5)	$\frac{3}{11} \times \left(\frac{1}{2} + \frac{5}{6}\right)$ (6)	$\frac{-21}{35}$ (7)	The value of x such that $x + \frac{1}{3} = \frac{1}{6}$ (8)
The value of x such that $x : \frac{2}{7} = 1\frac{3}{11}$ (9)	$\frac{1}{3} \times \frac{1}{7}$ (10)	$1\frac{3}{7}$ (11)	The value of x such that $x - \frac{2}{3} = -\frac{2}{9}$ (12)
$-\frac{2}{11} - \frac{3}{22}$ (13)	$\frac{2}{11} + \frac{1}{3} + \frac{9}{11}$ (14)	$1\frac{2}{3} - \left(2\frac{1}{3} - \frac{7}{15}\right)$ (15)	The value of x such that $\frac{2}{3}x + 1\frac{7}{12} = 2\frac{5}{36}$ (16)
$\frac{2}{7} - \frac{5}{9} + \frac{5}{7}$ (17)	The value of x such that $5x + 3\frac{9}{11} = 2\frac{9}{11}$ (18)	$\frac{11}{15} \div \left(1\frac{1}{5} - \frac{2 \times 4}{5^2}\right)$ (19)	The value of x such that $\frac{1}{3} : x = \frac{1}{4}$ (20)

Answer: Pairs of numbers or calculations which have the same value are:

and ; and ; and ; and ;
 and ; and ; and ; and ;
 and ; and .

EXAM 2

GRID INS

Fill in the blanks with the correct answers to answer 10 questions below.



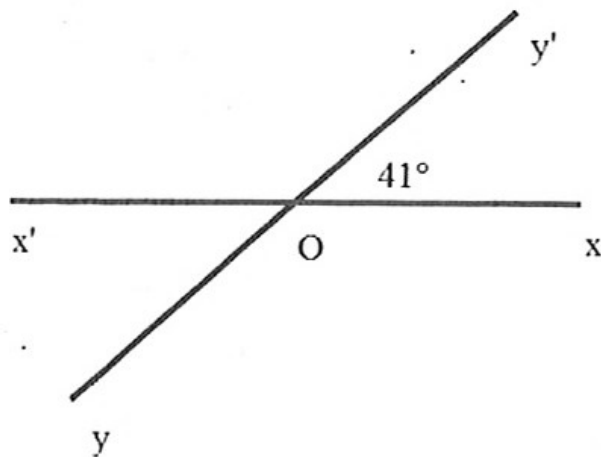
Question 1. Calculate: $A = \frac{7}{12} - \frac{4}{3} - 1\frac{3}{4}$.

Answer: $A = \dots$

(Write your answer as a decimal in the simplest form.)

Question 2. If $x + 1\frac{5}{3} = \frac{-7}{3}$ then $x = \dots$

Question 3.



Note: Figure is not drawn to scale.

In the figure above, $\widehat{x'Oy} = \dots^\circ$.

Question 4. The value of $\left(-\frac{7}{8} - \frac{1}{3}\right) + \left(\frac{1}{3} + \frac{1}{2}\right)$ is ...

(Write your answer as a decimal in the simplest form.)

Question 5. Given $A = 2\frac{2}{3} : \frac{4}{9}$ and $B = \frac{1}{3} \times 2\frac{1}{4}$. Compare: $A \dots B$

Question 6. Given $A = \frac{1}{7} - \frac{5}{8} + \frac{6}{7}$ and $B = \frac{7}{11} + \frac{1}{5} + \frac{4}{11}$.

$A \times B = \dots$

(Write your answer as a decimal in the simplest form.)

Question 7. Find the value of x such that $\left(x + \frac{3}{7}\right) \times \frac{2}{3} = 1\frac{2}{7}$.

Answer: $x = \dots$

(Write your answer as a decimal in the simplest form.)

Question 8. Find the least integer number x such that $\frac{4}{x-3}$ is an integer number.

Answer: $x = \dots$

Question 9. Suppose that $a, b \in \mathbb{Z}$ and $a, b > 0$.

Which expression has greater value, $A = \frac{a-3}{a}$ or $B = \frac{b+1}{b}$?

Answer: ...

Question 10. Suppose that

$$x(x+y+z) = 2; y(x+y+z) = 25; z(x+y+z) = -2; x > 0.$$

Find the values of x, y, z .

Answer: $x = \dots; y = \dots; z = \dots$

(Write your answer as a decimal in the simplest form.)

EXAM 3 **GOLDEN FROG**

Choose the correct answer in 4 options.



Question 1. The value of $\frac{5}{13} + \frac{-7}{26}$ is ...

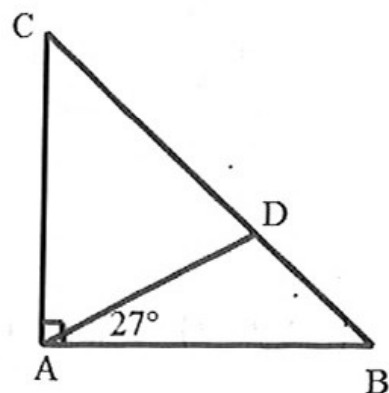
(A) $\frac{3}{26}$

(B) $\frac{17}{26}$

(C) $\frac{-3}{26}$

(D) $\frac{-17}{26}$

Question 2.



Note: Figure is not drawn to scale.

In the figure above, $\widehat{CAD} = \dots^\circ$

(A) 27

(B) 117

(C) 63

(D) 153

Question 3. Find the value of x such that $x + \frac{7}{81} = \frac{1}{9}$.

(A) $\frac{-2}{81}$

(B) $\frac{-16}{81}$

(C) $\frac{16}{81}$

(D) $\frac{2}{81}$

Question 4. Given the sequence $-\frac{4}{3}; 0; \frac{2}{3}; -\frac{1}{2}; \frac{7}{5}$. The greatest number in the sequence is ...

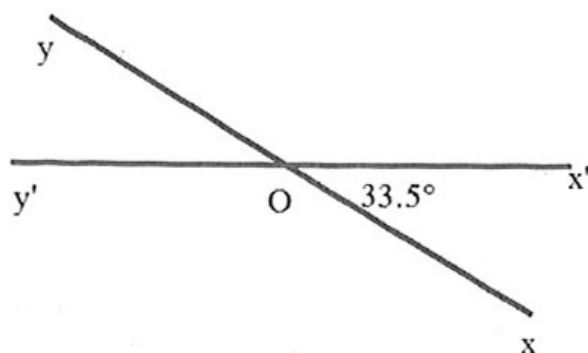
(A) 0

(B) $-\frac{4}{3}$

(C) $\frac{7}{5}$

(D) $\frac{2}{3}$

Question 5.



Note: Figure is not drawn to scale.

In this figure, the sum of $\widehat{xOy}$ and $\widehat{y'Oy}$ is ...

(A) 33.5°

(B) 180°

(C) 67°

(D) 293°

Question 6. If $\left(\frac{1}{2} - \frac{1}{3}\right)x + \frac{5}{6} = 2\frac{1}{6}$ then $x = \dots$

(A) 18

(B) 8

(C) $\frac{10}{3}$

(D) $-\frac{10}{3}$

Question 7. The value of $\left(\frac{1}{5} - \frac{2}{7}\right) \times 1\frac{1}{27} + 2\frac{2}{9}$ is ...

(A) $\frac{287}{135}$

(B) $-\frac{32}{15}$

(C) $\frac{32}{15}$

(D) $\frac{233}{105}$

Question 8. Find the value of x such that $\frac{2}{3}x : \frac{12}{13} = 1\frac{1}{6} - \frac{3}{8}$.

(A) $-\frac{41}{468}$

(B) $\frac{57}{52}$

(C) $\frac{247}{192}$

(D) $\frac{52}{57}$

Question 9. If $\frac{x}{3} - \frac{1}{y} = \frac{1}{6}$ (in which x and y are two integer numbers) then the maximum value of $y - x$ is...

(A) 0

(B) -1

(C) -6

(D) 5

Question 10. Find the value of x such that $\left(\frac{1}{3 \times 5} + \frac{1}{5 \times 7} + \dots + \frac{1}{17 \times 19}\right) : x = \frac{1}{2} - \frac{1}{4}$.

(A) $\frac{32}{57}$

(B) $\frac{8}{57}$

(C) $\frac{44}{57}$

(D) $\frac{11}{57}$

TEST 2

EXAM 1

MATCHING

Choose pairs of numbers or calculations which have the same value in the following table cells then fill their sequence number in below.



$-\frac{5}{3}$ 	$\frac{2}{5} - \frac{3}{7}$ 	$-\frac{5}{13} + \frac{2}{9} - \frac{8}{13}$ 	$2\frac{3}{5} \times \left(1\frac{3}{13} - \frac{17}{26}\right)$
$1\frac{7}{11} \times \left(1\frac{1}{3} + 1\frac{1}{9}\right)$ 	The value of x such that $\frac{1}{2}x + \frac{1}{3} = 1\frac{1}{12}$ 	$2\frac{3}{16} : \left(1\frac{1}{2} - \frac{5}{8}\right)$ 	$-\frac{5}{11} : \frac{7}{22}$
The value of x such that $x : \frac{7}{11} = -1\frac{2}{9}$ 	$-\frac{1}{35}$ 	The value of x such that $\frac{x}{5} - 2\frac{1}{7} = -1\frac{12}{35}$ 	The value of x such that $\frac{x}{3} : 1\frac{1}{6} = 1\frac{1}{7} - \frac{3}{7}$
The value of x such that $\frac{1}{3} - x = \frac{1}{6}$ 	$\frac{3}{2} - \frac{13}{11}$ 	$-1 - \frac{3}{7}$ 	$\frac{2}{7} + \frac{5}{9} + \frac{5}{7}$
$\frac{11}{12} : \left(3 + 2\frac{1}{2}\right)$ 	$\frac{2}{11} + \frac{3}{22}$ 	The value of x such that $x + \frac{3}{4} = 2\frac{11}{36}$ 	$-\frac{1}{3} - \frac{1}{5}$

Answer: Pairs of numbers or calculations which have the same value are:

and ; and ; and ; and ;
 and ; and ; and ; and ;
 and ; and .

EXAM 2 **GRID INS**

Fill in the blanks with the correct answers to answer 10 questions below.



Question 1. Find the value of x such that $x : 2\frac{1}{4} = 1$.

Answer: $x = \dots$

(Write your answer as a decimal in the simplest form.)

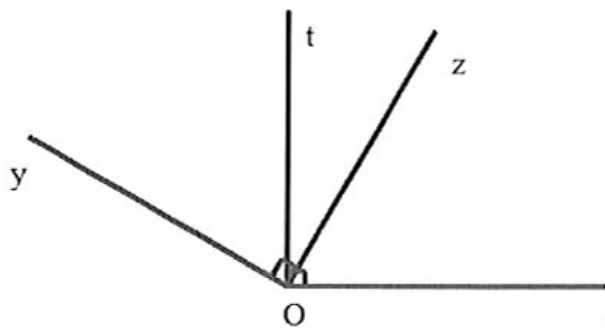
Question 2. The value of x satisfying $\frac{3}{8}x = 1\frac{7}{8}$ is ...

Question 3. Given $P = \frac{7}{11} : \frac{21}{22}$ and $Q = \frac{14}{25} \times \frac{5}{7}$. Calculate: $P - Q = \dots$

(Round to three decimal places.)

Question 4. Given $A = \left(\frac{1}{3} + \frac{2}{5}\right) - \frac{7}{15}$ and $B = 1\frac{1}{3} - \left(\frac{1}{6} + \frac{1}{2}\right)$. Compare: $A \dots B$

Question 5.



$\times$ Note: Figure is not drawn to scale.

In the figure above, if $\widehat{xOy} = 150^\circ$ then $\widehat{zOt} = \dots^\circ$.

Question 6. Given $P = \left(\frac{2}{5} + \frac{3}{7}\right) - \frac{17}{35}$ and $Q = 2\frac{2}{7} - \left(\frac{1}{2} + 1\frac{3}{14}\right)$.

Calculate: $\frac{P}{Q} = \dots$

(Write your answer as a decimal in simplest form.)

Question 7. Given $A = \frac{3}{4} - \left(\frac{2}{7} + \frac{3}{14}\right)$ and $B = \left(\frac{4}{5} - \frac{2}{3}\right) : \frac{1}{3}$. Compare: A ... B.

Question 8. The number of the values of $x > 0$ ($x \in \mathbb{Z}$) such that the value of $\frac{x+3}{x+2} - \frac{x}{x+2}$ is an integer number.

Answer: ... number(s).

Question 9. Given $P = \frac{57 \times 377 - 256}{56 \times 377 + 121}$ and $Q = \frac{37 \times 201 - 169}{35 \times 201 + 32}$. Compare: P...Q.

Question 10. Find the value of x such that $\frac{x-2}{(a+3)(5-a)} = \frac{1}{2(a+3)} + \frac{1}{2(5-a)}$

($a \neq -3; 5$).

Answer: $x = \dots$

EXAM 3
GOLDEN FROG

Choose the correct answer in 4 options.



Question 1. Choose the correct answer: $\frac{7}{15} \times \frac{3}{28} = \dots$

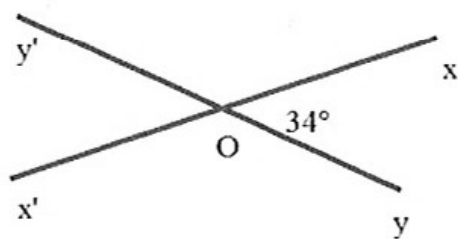
(A) $\frac{-1}{20}$

(B) $\frac{1}{20}$

(C) $\frac{21}{84}$

(D) $\frac{21}{15}$

Question 2.



Note: Figure is not drawn to scale.

In the figure above, $\widehat{x'Oy'} = \dots^\circ$.

(A) 68

(B) 146

(C) 34

(D) 56

Question 3. Find the value of x such that $\frac{3}{5}x : \frac{3}{5} = \frac{1}{3}$.

(A) $\frac{1}{3}$

(B) 3

(C) 5

(D) $\frac{1}{5}$

Question 4. Find the value of x such that $(0.75x + 0.5) \times \frac{3}{2} = \frac{6}{7}$.

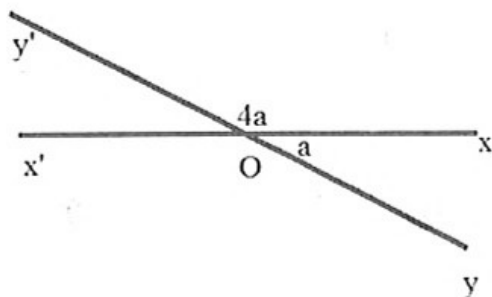
(A) $\frac{32}{21}$

(B) $\frac{2}{21}$

(C) $\frac{26}{35}$

(D) $\frac{22}{21}$

Question 5.



Note: Figure is not drawn to scale.

In this figure, $\widehat{x'Oy'} = \dots^\circ$.

(A) 36

(B) 45

(C) 60

(D) 50

Question 6. Calculate: $\left(\frac{1}{11} - \frac{7}{22}\right) : \frac{9}{11} + \left(\frac{3}{2} + \frac{8}{9}\right) \times \frac{2}{7} = \dots$

(A) $\frac{42}{17}$

(B) $\frac{-42}{17}$

(C) $\frac{-17}{42}$

(D) $\frac{17}{42}$

Question 7. Calculate: $\left(1\frac{2}{3} - 3\frac{1}{2}\right) : \frac{5}{6} + \frac{2}{3} \times \left(\frac{1}{2} - \frac{3}{4}\right) = \dots$

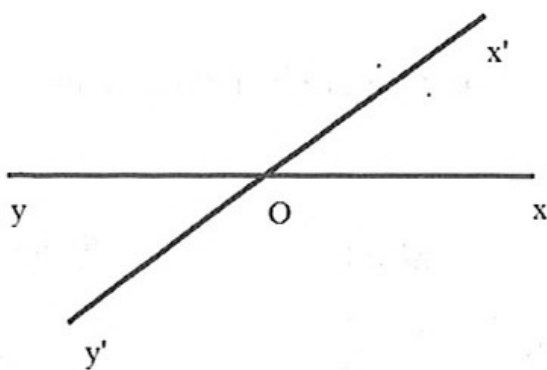
(A) $-\frac{71}{30}$

(B) $-\frac{59}{20}$

(C) $-\frac{29}{20}$

(D) $\frac{71}{30}$

Question 8.



Note: Figure is not drawn to scale.

In the figure above, if $\widehat{xOx'} + \widehat{yOy'} = 76^\circ$ then $\widehat{x'Oy} = \dots^\circ$.

(A) 76

(B) 51

(C) 38

(D) 142

Question 9. The value of x such that $\left(1\frac{2}{5} - \frac{4}{3}\right) : \frac{2x}{3} = 1\frac{1}{15} - 2\frac{2}{5}$ is ...

(A) $\frac{21}{26}$

(B) $-\frac{3}{40}$

(C) $\frac{3}{40}$

(D) $\frac{26}{21}$

Question 10. The value of $\frac{0.5 - 0.75 + \frac{5}{11} - \frac{7}{13}}{1.5 - 2.25 + 1\frac{4}{11} - 1\frac{8}{13}}$ is ...

(A) $\frac{1}{2}$

(B) $\frac{2}{3}$

(C) $\frac{1}{3}$

(D) $\frac{3}{2}$

ROUND 3

TEST 1

EXAM 1

ARRANGEMENT

Arrange numbers or calculations in order from least to greatest then fill their sequence numbers in below.



-2^2 	$(-1)^6$ 	The value of x such that $2^{x-1} = (2^4)^4$ 	The value of x such that $3^{x-5} = (3^3)^3$
$\frac{(-2)^4}{4}$ 	$ -1 - 1 $ 	$(-2)^3$ 	The value of x such that $\frac{2^2}{x-7} = \frac{(-2)^2}{ -2 ^3}$
$0.68 + 1.59 + 2.73$ 	The value of x such that $4 \times 2^{x-9} + 2^{x-8} = 2^3 \times 768$ 	$\left(\frac{1}{2}\right)^3 \times 2^6$ 	-7
The value of x such that $4^2 \times 2^6 = 2^x$ 	The maximum value of $3 \times 7 - \left \frac{23}{11} - 7x\right $ 	$3^2 - 2 \times 3$ 	$\frac{2^3 \times 3^2}{4 \times 3}$
The value of x such that $3^4 x - 2^4 \times 3^2 = 3^2 \times 2^7$ 	$(-1.75) + (-1.25)$ 	$-2 \times 2\frac{1}{2}$ 	$- 2 $

The correct order is:

→ → → → → → → → → →

← ← ← ← ← ← ← ← ←

Let's reach the intellectual peak by answering the questions below.



Question 1. The value of $|-7|$ is ...

Question 2. Find the value of x such that $\frac{x}{2} = \frac{2}{3}$.

Answer: $x = \dots$

(Write your answer as a fraction in the simplest form.)

Question 3. The value of $2^2 \times 2^3$ is ...

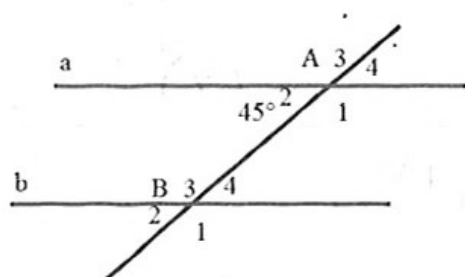
(A) 2^1

(B) 2^5

(C) 2^6

(D) 2^{-1}

Question 4.



Note: Figure is not drawn to scale.

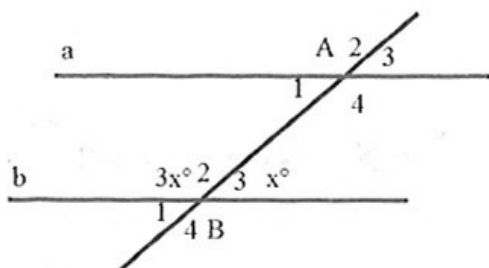
In the figure above, suppose that $a \parallel b$ then $\widehat{B_4} = \dots^\circ$.

Question 5. Find the value of x such that $x : \left(\frac{1}{3}\right)^2 = 3$.

Answer: $x = \dots$

(Write your answer as a fraction in the simplest form.)

Question 6.



Note: Figure is not drawn to scale.

In the figure above, if $a \parallel b$ then $\widehat{A_3} = \dots^\circ$.

Question 7. Find the value of x such that $2x - 0.76 = |-0.37 - 1.29|$.

(A) 0.84

(B) 0.45

(C) 1.21

(D) 1.12

Question 8. Find the value of x such that $\frac{x}{2} = \frac{x+2}{3}$.

Answer: $x = \dots$

Question 9. The value of $\frac{3^{15} \times 5^5 + 3^{12} \times 5^7}{3^{17} \times 5^6 - 3^{14} \times 5^8}$ is ...

(Write your answer as a fraction in the simplest form.)

Question 10. Find the values of x and y such that $3^x \times 5^{y+3} = 75^y$.

Answer: $x = \dots$ and $y = \dots$

EXAM 3

TREASURE HUNTING

Let's help the miner to go through the maze by answering 10 questions to reach the destination.



Question 1. The value of $-|-5|$ is ...

Question 2. Find the value of x such that $x : 2.5 = 3 : 5.5$.

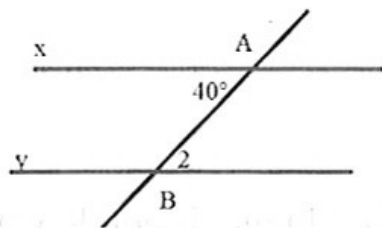
(A) $\frac{11}{15}$

(B) $\frac{55}{12}$

(C) $\frac{33}{5}$

(D) $\frac{15}{11}$

Question 3.



Note: Figure is not drawn to scale.

In the figure above, if $x \parallel y$ then $\widehat{B_2} = \dots^\circ$.

(A) 140

(B) 40

(C) 50

(D) 90

Question 4. The value of x such that $2^3 \times x^3 = (-2)^3 \times 3^3$ is ...

Question 5. The value of $(-1)^{3^2} + 1^{2^3}$ is ...

(A) 0

(B) -2

(C) 2

(D) 1

Question 6. Find the value of x such that $(2x - 3)^3 = 8$.

(A) $\frac{3}{2}$

(B) $\frac{7}{2}$

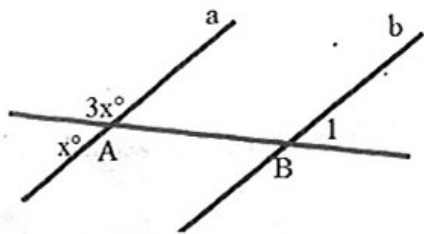
(C) $\frac{5}{2}$

(D) $\frac{11}{2}$

Question 7. Find the value of x such that $\left[(-0.25)^2\right]^x = \frac{1}{16}$.

Answer: $x = \dots$

Question 8.



Note: Figure is not drawn to scale.

In the figure above, if $a \parallel b$ then $\widehat{B_1} = \dots^\circ$.

Question 9. Find the values of x and y such that $\frac{x}{y} = 3$ and $\frac{x^2}{y} = 18$.

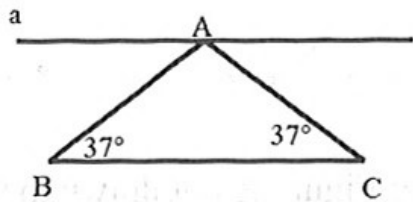
(A) $x = 6$ and $y = 2$

(B) $x = 2$ and $y = 6$

(C) $x = 3$ and $y = 1$

(D) $x = 1$ and $y = 3$

Question 10.



Note: Figure is not drawn to scale.

In the figure above, if $a \parallel BC$ then $\widehat{BAC} = \dots^\circ$.

(A) 53

(B) 143

(C) 74

(D) 106

TEST 2

EXAM 1 ARRANGEMENT

Arrange numbers or calculations in order from least to greatest then fill their sequence numbers in below.



$3 \times -2 ^3 - 3^2 - 2^1$	$-(-3)^2$	$(-1-1)^1$	$(-2)^3$
1	2	3	4
$(-1)^{2000}$	$(-3)^{10} : 3^9$	The minimum value of $ 5x - \frac{11}{3} + 2^2 \times 5$	$2.27 + (-2)^2 + 0.73$
5	6	7	8
$-3 - 4$	$\frac{2^5 \times 3^3}{3 \times 2^3} - 2^3 \times 3$	$2 \times (-3)$	$(-1)^3$
9	10	11	12
$(-3)^2 + \left(\frac{1}{2}\right)^2 \times 2^3$	$3^5 \times 3^{-3}$	$-2^6 : (-2)^5$	$\frac{3^9 \times 7^2}{7 \times 9^4}$
13	14	15	16
$(-1.5) + (-2.5)$	$ 7 - -7 $	The value of x such that $\frac{x+2}{5} = \frac{2^7}{2^5}$	$- -3 $
17	18	19	20

The correct order is:

→ → → → → → → → → →

← ← ← ← ← ← ← ← ←

Let's reach the intellectual peak by answering the questions below.



Question 1. The value of x such that $\frac{3}{x} = \frac{2}{5}$ is ...

(A) $\frac{10}{3}$

(B) $\frac{15}{2}$

(C) $\frac{6}{5}$

(D) $\frac{2}{15}$

Question 2. The value of $3^7 : 3^5$ is ...

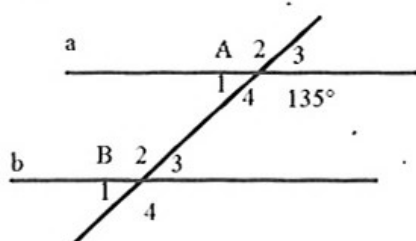
(A) 3^{-2}

(B) 3^{35}

(C) 3^2

(D) 3^{12}

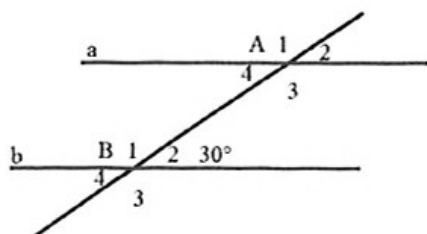
Question 3.



Note: Figure is not drawn to scale.

In the figure above, if $a \parallel b$ then $\widehat{B_4} = \dots^\circ$.

Question 4.



Note: Figure is not drawn to scale.

In the figure above, if $a \parallel b$ then $\widehat{A_3} = \dots^\circ$.

(A) 150

(B) 30

(C) 60

(D) 90

Question 5. Find the value of x such that $\left| 2x - \frac{3}{2} \right| = 2^2 - |-3|$.

Answer: $x = \dots$

(A) $\frac{1}{4}$ or $\frac{5}{4}$

(B) $-\frac{1}{4}$

(C) $-\frac{5}{4}$

(D) $\frac{25}{4}$ or $-\frac{19}{4}$

Question 6. Find the value of x such that $4 \times (-2)^x = -32$.

Answer: $x = \dots$

Question 7. The value of $\frac{9^4 \times 27^3}{81^4} - \frac{3^{11} \times 4^5}{6^{10}}$ is ...

Question 8. Find the value of x such that $3^{-2} \times 9^2 \times 3^{2x} = 81$.

(A) 2

(B) 4

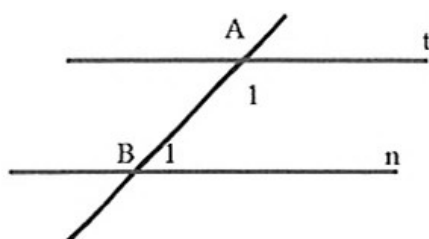
(C) 1

(D) 3

Question 9. Find the values of x and y such that $|x - 7| + |2y + 6| = 0$.

Answer: $x = \dots$; $y = \dots$

Question 10.



Note: Figure is not drawn to scale.

In the figure above, if $t \parallel n$ and $3\widehat{B_1} - \widehat{A_1} = 20^\circ$ then $\widehat{B_1} = \dots^\circ$.

(A) 70

(B) 80

(C) 50

(D) 60

EXAM 3**TREASURE HUNTING**

Let's help the miner to go through the maze by answering 10 questions to reach the destination.



Question 1. The value of x such that $x = -|3|$ is ...

Question 2. Find the value of x such that $x = \frac{2^3}{3^2} \times \frac{3^3}{2^2}$.

Answer: $x = \dots$

Question 3. Find the value of n such that $\left(\frac{1}{3}\right)^n = \frac{1}{9}$.

Answer: $n = \dots$

Question 4. Find the greatest integer number n such that $n^{100} < 16^{50}$.

Answer: $n = \dots$

Question 5. The value of $(3^2)^{2^3}$ is ...

(A) 3^{16}

(B) 3^{12}

(C) 3^7

(D) 3^8

Question 6. The positive value of x such that $|x - 2|^2 = 16$ is ...

(A) 1

(B) 2

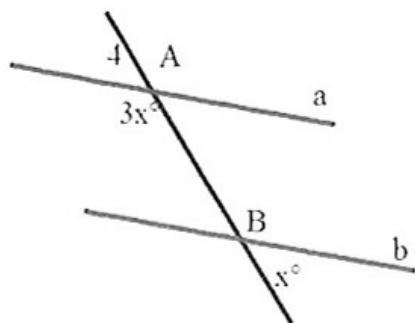
(C) 4

(D) 6

Question 7. Find the value of x such that $4^6 : 2^x = 256$.

Answer: $x = \dots$

Question 8.



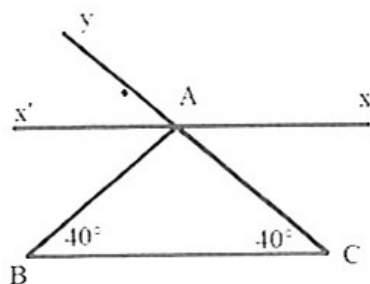
Note: Figure is not drawn to scale.

In the figure above, if $a \parallel b$ then $\widehat{A}_1 = \dots^\circ$.

Question 9. If $x = 2y$ then the value of $\frac{y}{xz} : \frac{x}{yz}$ is ...

(Write your answer as a fraction in the simplest form.)

Question 10.



Note: Figure is not drawn to scale.

In the figure above, if $xx' \parallel BC$ then $\widehat{BAy} = \dots^\circ$.

ROUND 4

TEST 1

EXAM 1 GRID INS

Fill in the blanks with the correct answers to answer 10 questions below.



Question 1. Find the value of x such that $x : 2 = 2^3 : 2^2$.

Answer: $x = \dots$

Question 2. Find the values of x and y such that $\frac{x}{2} = \frac{y}{3}$ and $x + y = 5$.

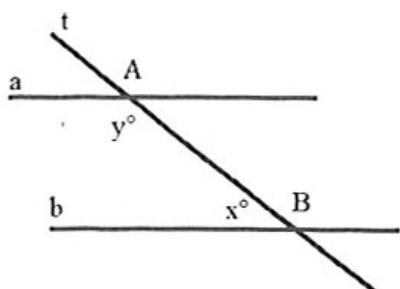
Answer: The values of x and y are ..., respectively.

(Use “;” between two numbers.)

Question 3. The value of $|-2| + 2 = \dots$

Question 4. Compare: $|-3|^3 \dots (-3)^3$.

Question 5.



Note: Figure is not drawn to scale.

In the figure above, if $a \parallel b$ and $\frac{x}{y} = \frac{1}{3}$ then $y = \dots$

Question 6. The value of $0.(11) \times (-3)^2$ is ...

Question 7. Find the value of x such that $\frac{x+3}{7} = \frac{2-x}{3}$.

Answer: $x = \dots$

(Write your answer as a decimal in the simplest form.)

Question 8. Find the sum $x + y + z$ if $x : y : z = 2 : 3 : 4$ and $4x - 3y - 2z = 9$.

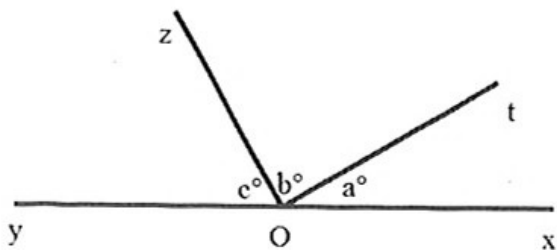
Answer: $x + y + z = \dots$

Question 9. Find the values of x and y such that $\frac{2x-3y}{5} = \frac{2y-x}{6}$ and $x - y = 11$.

Answer: The values of x and y are ..., respectively.

(Use “;” between two numbers.)

Question 10.

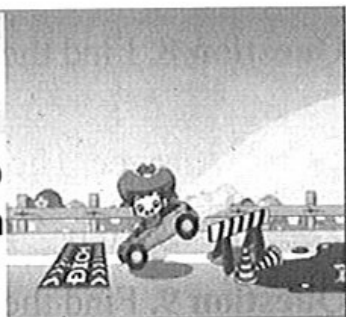


Note: Figure is not drawn to scale.

In the figure above, if $a : b : c = 1 : 3 : 2$ then $\widehat{yOt} = \dots^\circ$.

EXAM 2 JUMP OVER

You have to drive your car passing 10 obstacles to finish. In order to overcome each obstacle, you have to answer correctly one question in that obstacle. Are you ready?



Question 1. The value of x such that $\frac{x}{3} = \frac{2}{3}$ is ...

Question 2. If $\frac{x}{2} = \frac{y}{3}$ and $x - y = 1$ then

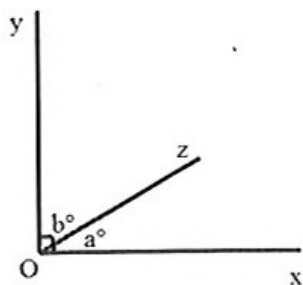
(A) $x = -2$ and $y = -3$

(B) $x = 2$ and $y = 3$

(C) $x = -2$ and $y = 3$

(D) $x = 2$ and $y = -3$

Question 3.



Note: Figure is not drawn to scale.

In this figure, if the ratio of b to a is 2 then $b = \dots$

Question 4. Find the product of x and y if $\frac{x}{-2} = \frac{y}{3}$ and $x + y = 1$.

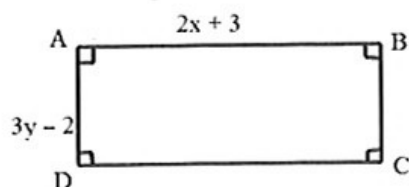
Answer: The product $x \times y$ is ...

Question 5. Find the value of x such that $\frac{2}{x-3} = \frac{3}{x+2}$.

Answer: $x = \dots$

Question 6. Compare: $0.(541) \dots 0.54(154)$

Question 7.



Note: Figure is not drawn to scale.

In the figure above, if $2x = 5y$ and the perimeter of the rectangle ABCD is 18cm then the area of ABCD is ... cm^2 .

Question 8. Find the sum $x + y$ if $\frac{x}{y} = \frac{2}{3}$ and $x^2 + y^2 = 52$.

Answer: The sum $x + y$ is ...

- Ⓐ 10 or -10 Ⓑ 11 Ⓒ -26 Ⓓ -26 or 26

Question 9. Find the values of x ; y ; z if $2x = 3y$; $4y = 3z$ and $x - y + z = -44$.

Answer: The values of x ; y ; z are ..., respectively.

(Use “;” between two numbers.)

Question 10. The ratio of x to y is $\frac{3}{5}$ and if add 2 to y then that ratio is $\frac{2}{5}$.

The values of x ; y are ..., respectively.

(Write your answer as a fraction in the simplest form and use “;” between two numbers.)

EXAM 3**GOLDEN FROG**

Choose the correct answer in 4 options.



Question 1. If $2x = 3y$ then the ratio of x to y is...

(A) $\frac{2}{3}$

(B) 6

(C) $\frac{3}{2}$

(D) $\frac{1}{6}$

Question 2. The value of x such that $\frac{11}{2-x} = \frac{9}{5}$ is ...

(A) $\frac{89}{9}$

(B) $-\frac{23}{11}$

(C) $\frac{37}{9}$

(D) $-\frac{37}{9}$

Question 3. Find the values of x and y such that $\frac{x}{7} = \frac{y}{3}$ and $x - y = 4$.

(A) $x = 7$ and $y = 3$

(B) $x = 3$ and $y = 7$

(C) $x = 5$ and $y = 1$

(D) $x = 4$ and $y = 0$

Question 4.

a _____

b _____

c _____

Note: Figure is not drawn to scale.

In the figure above, if $a \parallel b$ and $c \parallel b$ then

(A) a cuts c

(B) $a \perp c$

(C) $a \parallel b \parallel c$

(D) $a \equiv c$

Question 5. In a class, the ratio of male students to female students is $\frac{3}{4}$ and the number of the female students is 10 more than the number of the male students. How many students are there in the class?

(A) 60

(B) 70

(C) 50

(D) 80

Question 6. Find the values of x ; y ; z such that $\frac{x}{2} = \frac{y}{3} = \frac{z}{4}$ and $x + y - z = 1$.

(A) $x = -2$; $y = -3$; $z = -4$

(B) $x = 2$; $y = -3$; $z = -2$

(C) $x = 2$; $y = 3$; $z = 4$

(D) $x = -2$; $y = -3$; $z = -6$

Question 7. If $x : y : z = 3 : 2 : 4$ and $x + y + z = -9$ then the product xyz is ...

(A) -20

(B) -24

(C) 20

(D) 24

Question 8. Find the values of x and y such that $\frac{x+3}{2} = \frac{y-2}{3}$ and $x - y = -3$.

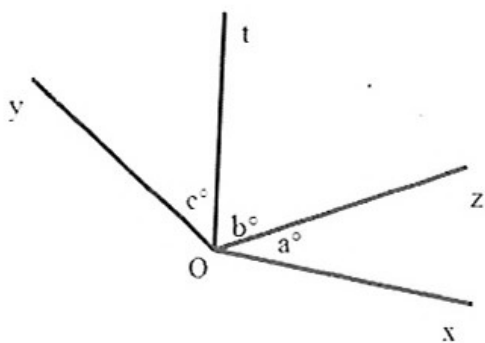
(A) $x = -7$ and $y = -4$

(B) $x = 4$ and $y = 7$

(C) $x = -4$ and $y = -1$

(D) $x = 4$ and $y = 5$

Question 9.



Note: Figure is not drawn to scale.

In the figure above, if $a : b : c = 3 : 7 : 5$ and $\widehat{xOt} = 100^\circ$ then $\widehat{zOy} = \dots^\circ$.

(A) 100

(B) 110

(C) 120

(D) 130

Question 10.

A triangle has 3 segments AB, BC, AC and $AB : AC : BC = 4 : 6 : 5$.

Suppose that its perimeter is 30cm. Which is the longest segment? What is the measure of this segment?

(A) $AB = 12\text{cm}$

(B) $AC = 12\text{cm}$

(C) $AB = 6\text{cm}$

(D) $AC = 10\text{cm}$

TEST 2

EXAM 1

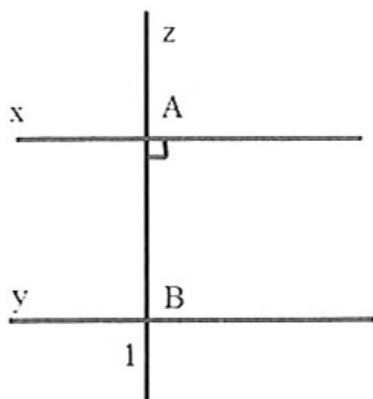
GRID INS

Fill in the blanks with the correct answers to answer 10 questions below.



Question 1. If $\frac{3}{x} = \frac{3}{4}$ then $x = \dots$

Question 2.



Note: Figure is not drawn to scale.

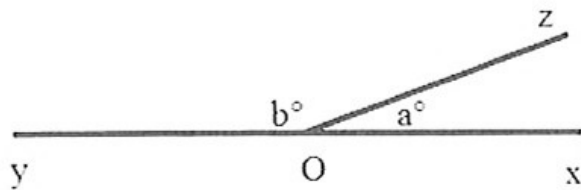
In the figure above, if $x \parallel y$ then $\widehat{B_1} = \dots^\circ$.

Question 3. Compare: $2^{-2} \dots (-2)^2$.

Question 4. The value of x such that $2^3 \times x^2 = 32$ is ...

Question 5. The value of $0.(09) + 0.(09)$ is ...

Question 6.



Note: Figure is not drawn to scale.

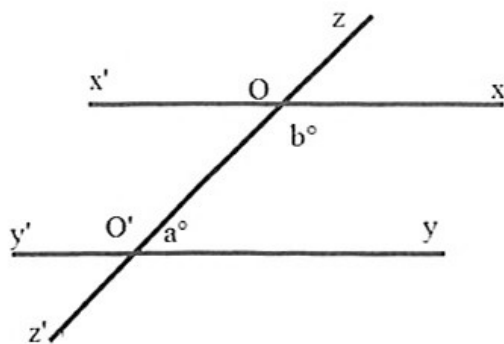
In the figure above, if $\frac{a}{2} = \frac{b}{8}$ then $\widehat{yOz} = \dots^\circ$.

Question 7. Find the values of x and y such that $3x = 5y$ and $2x - 3y = 5$.

Answer: The values of x ; y are ..., respectively.

(Use “;” between two numbers.)

Question 8.



Note: Figure is not drawn to scale.

In the figure above, if $a : b = 1 : 2$ then $\widehat{zOx} + \widehat{OO'y'} + \widehat{z'O'y} = \dots^\circ$.

Question 9. If $\frac{5x+2y}{3} = \frac{y-4x}{5}$ and $x+3y = -8$ then $13(x+y) = \dots$

Question 10. Find the product of x and y if $\frac{x-4}{3} = \frac{3-y}{4}$ and $2x-3y = 17$.

Answer: The product $x \times y$ is ...

EXAM 2 JUMP OVER

You have to drive your car passing 10 obstacles to finish. In order to overcome each obstacle, you have to answer correctly one question in that obstacle. Are you ready?



Question 1. In a class, there are 48 students and the ratio of male students to female students is $1:2$. How many female students are there in the class?

Answer: There are ... female students.

Question 2. If $3x = 5y$ then the ratio of y to x is ...

(A) $\frac{5}{3}$

(B) 8

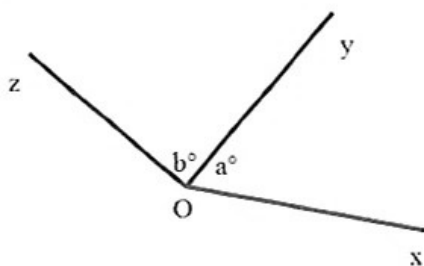
(C) 15

(D) $\frac{3}{5}$

Question 3. Find the value of x such that $\frac{2}{3} = \frac{4}{2-x}$.

Answer: $x = \dots$

Question 4.



Note: Figure is not drawn to scale.

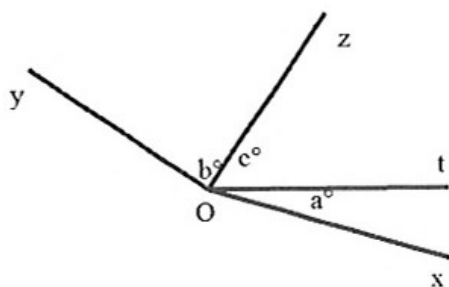
In the figure above, if $\widehat{xOz} = 150^\circ$ and $2b = 3a$ then $\widehat{yOz} = \dots^\circ$.

Question 5. Find the value of x such that $\frac{7}{3-x} = \frac{11}{x+5}$.

Answer: $x = \dots$

(Write your answer as a fraction in the simplest form)

Question 6.

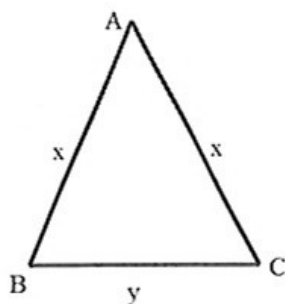


Note: Figure is not drawn to scale.

In the figure above, if $\widehat{xOy} = 162^\circ$ and $a : b : c = 1 : 5 : 3$ then $\widehat{xOz} = \dots^\circ$.

Question 7. Compare: $0.(71) \dots 0.7(17)$.

Question 8.



Note: Figure is not drawn to scale

In the figure above, if $\frac{x}{y} = \frac{4}{3}$ and the perimeter of the triangle ABC is

22cm then $x; y = \dots$, respectively.

(Use “;” between two numbers.)

Question 9. Find the values of x ; y ; z if $2x = 3y = 4z$ and $xyz = 72$.

Answer: The values of x ; y ; z are ..., respectively.

(Use “;” between two numbers.)

Question 10. Find the values of x and y such that $\frac{x-5y}{3} = \frac{3x+y}{5}$ and $x-y=4$.

Answer: The value of x ; y are ..., respectively.

(Write your answer as a fraction in the simplest form, in order and use “;” between two numbers.)

EXAM 3

GOLDEN FROG

Choose the correct answer in 4 options.



Question 1. If $\frac{x}{3} = \frac{y}{5}$ and $x+y=8$ then

(A) $x=3$ and $y=5$

(B) $x=5$ and $y=3$

(C) $x=-3$ and $y=5$

(D) $x=-5$ and $y=-3$

Question 2. Find the value of x such that $\frac{x+7}{5} = \frac{3}{7}$.

(A) $\frac{14}{3}$

(B) $\frac{-34}{7}$

(C) $\frac{20}{7}$

(D) $\frac{34}{7}$

Question 3. The values of x and y such that $5x=7y$ and $x+y=12$ are...

(A) $x=-7$ and $y=-5$

(B) $x=8$ and $y=4$

(C) $x=5$ and $y=7$

(D) $x=7$ and $y=5$

Question 4. The value of x such that $\frac{2x+3}{5} = \frac{x-7}{2}$ is ...

(A) -41

(B) $\frac{-29}{8}$

(C) 41

(D) $\frac{29}{8}$

Question 5. Find the sum $x + y$ if $7x = 9y$ and $x - y = 4$.

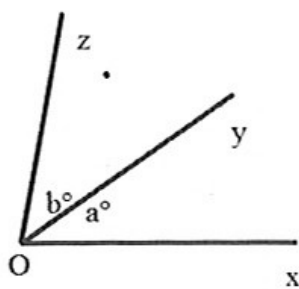
(A) $x + y = -16$

(B) $x + y = 16$

(C) $x + y = -32$

(D) $x + y = 32$

Question 6.



Note: Figure is not drawn to scale.

In the figure above, if $a : b = 7 : 9$ and $2a + 4b = 250$ then $\widehat{xOz} = \dots^\circ$.

(A) 80

(B) 90

(C) 70

(D) 100

Question 7. Find the values of x and y such that $\frac{2-x}{3} = \frac{y+5}{2}$ and $y - x = -2$.

(A) $x = 1$ and $y = -3$

(B) $x = -1$ and $y = -3$

(C) $x = 1$ and $y = -1$

(D) $x = -1$ and $y = 3$

Question 8:

In grade 8, there are 3 classes 8A, 8B, 8C and there are 105 students in total.

Suppose that the number of the students of 8A is equal to $\frac{7}{6}$ of the number of

the students of 8B, the number of the students of 8B is equal to $\frac{3}{4}$ of the

number of the students of 8C. How many students are there in 8A?

(A) 30

(B) 35

(C) 40

(D) 45

Question 9. Find the values of x ; y ; z if $\frac{x+1}{3} = \frac{y-3}{5} = \frac{2-z}{2}$ and $x + y + z = -2$.

(A) $x = -4$; $y = -2$; $z = 4$

(B) $x = 4$; $y = -2$; $z = -4$

(C) $x = -2$; $y = 4$; $z = -4$

(D) $x = -2$; $y = -4$; $z = 4$

Question 10. Find the sum $x + y + z + t$ if $x : y : z : t = 1 : 3 : 5 : 7$ and $x - y + z - t = 4$.

(A) $x + y + z + t = -32$

(B) $x + y + z + t = -16$

(C) $x + y + z + t = 16$

(D) $x + y + z + t = 32$

ROUND 5

TEST 1

EXAM 1

TREASURE HUNTING

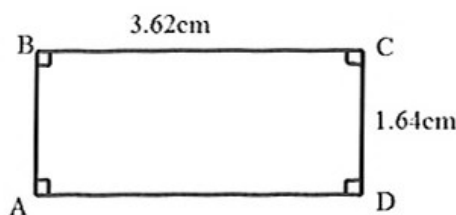
Let's help the miner to go through the maze by answering 10 questions to reach the destination.



Question 1. Fill the suitable digit in the following blank.

$$-2.15 < -2.\square 5$$

Question 2:



Note: Figure is not drawn to scale.

In the figure above, the area of the rectangle ABCD is ... cm^2 .

(Write your answer as a decimal in the simplest form.)

Question 3. The value of x such that $\sqrt{3-x} = 0$ is ...

Question 4. Calculate: $\sqrt{16} + \sqrt{36} - \sqrt{(-4)^2} = \dots$

Question 5. Given a triangle ABC with $\hat{B} = 50^\circ$ and $\hat{A} - \hat{C} = 10^\circ$. Find the measure of the greatest angle of the triangle ABC.

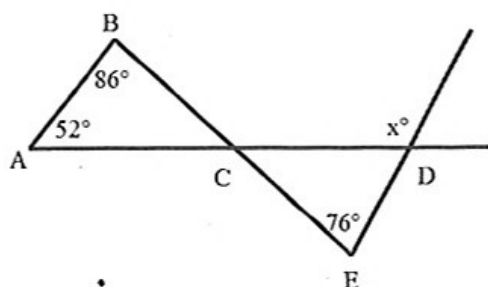
Answer: The measure of the greatest angle of the triangle ABC is ... $^\circ$.

Question 6. Find the value of x such that $2\sqrt{3-x} = 4$.

Answer: $x = \dots$

Question 7. The minimum value of $\sqrt{3x-2} + 2$ is ...

Question 8.



Note: Figure is not drawn to scale.

Find the value of x in this figure.

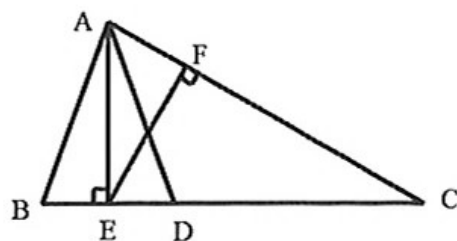
Answer: $x = \dots$

Question 9. Find the maximum value of the expression:

$$A = \sqrt{1-2x} + 12 - \sqrt{4-8x}.$$

Answer: The maximum value of A is ...

Question 10.



Note: Figure is not drawn to scale.

In the figure above, AD is the bisector of the angle BAC and $\widehat{ACB} = 30^\circ$, $\widehat{ABC} = 70^\circ$. Find the measure of the angle EAD .

Answer: $\widehat{EAD} = \dots^\circ$.

● EXAM 2 MATCHING

Choose pairs of numbers or calculations which have the same value in the following table cells then fill their sequence number in ○ below.



$\sqrt{9}$ 1	$\sqrt{(-7)^2}$ 2	The value of $\sqrt{a^2 + b^2 - c^2}$, where $a = b = 2$, $c = -1$ 3	The value of x such that $2 + \sqrt{2x} = 8$ 4
$\sqrt{2+10+4}$ 5	$\frac{1}{\sqrt{25}} + \frac{\sqrt{16}}{5}$ 6	3 7	$\sqrt{7}$ 8
$\sqrt{(-5)^2} + \sqrt{(-9)^2}$ $-\sqrt{-(-4)^3}$ 9	The maximum value of $1.21 - \sqrt{11 - 3x}$ 10	7 11	$\sqrt{(-3.113)^2}$ $:(\sqrt{3.113})^2$ 12
The value of $\sqrt{a^3 b^2}$, where $a = b = 4$ 13	The value of $a^4 - b^6$, where $a = \sqrt{5}$; $b = \sqrt{2}$ 14	$2\sqrt{81}$ 15	The value of $a^2 + b^4$, where $a = 4$; $b = 2$ 16
The minimum value of $\sqrt{5x-1} + (1.1)^2$ 17	The value of $a^4 + (ab)^2 + 7$, where $a = \sqrt{2}$; $b = \sqrt{3}$ 18	$\sqrt{(-2) \times (-18)}$ 19	4 20

Answer: Pairs of numbers or calculations which have the same value are:

○ and ○ ; ○ and ○ ; ○ and ○ ; ○ and ○ ;
 ○ and ○ ; ○ and ○ ; ○ and ○ ; ○ and ○ ;
 ○ and ○ ; ○ and ○ .

EXAM 3 KID CHAMPION

Let's reach the intellectual peak by answering the questions below.



Question 1. Fill the suitable number in the following blank.

$$\sqrt{(-3)^2} = \dots$$

Question 2. The area of a square with side length $2\sqrt{3}\text{cm}$ is $\dots\text{cm}^2$.

Question 3. Calculate: $\sqrt{\frac{9}{100}} = \dots$

(Write your answer as a decimal in the simplest form.)

Question 4. Given a triangle ABC with $\hat{A} = 60^\circ$ and $\hat{B} = 3\hat{C}$ then $\hat{B} = \dots^\circ$.

Question 5. Calculate: $A = \left[(-5.11)^7\right]^0 + \sqrt{(-2.91)^2} + (\sqrt{1.09})^2$.

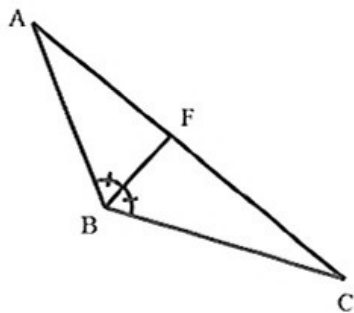
Answer: $A = \dots$

Question 6. Find the value of x such that $-3.41x + 2.79 + 5.12 = (2.13 + 4.30) - 5.98$.

Answer: $x = \dots$

(Round to three decimal places.)

Question 7.



Note: Figure is not drawn to scale.

In the figure above, BF is the bisector of the angle ABC and $\widehat{BAF} = 27.7^\circ$; $\widehat{BCA} = 22.72^\circ$. Find the measure of the angle BFA.

Answer: $\widehat{BFA} = \dots^\circ$.

(Write your answer as a decimal in the simplest form.)

Question 8. Given a triangle ABC with $56\hat{A} = 24\hat{B} = 21\hat{C}$. Find the measure of the angles A; B; C.

Answer: $\hat{A} = \dots^\circ$; $\hat{B} = \dots^\circ$; $\hat{C} = \dots^\circ$.

Question 9. Find the value of x such that

$$\left(\sqrt{16} + \sqrt{(-2)^2}\right)(x+1) - (-1)^6 = \left(\sqrt{(-4)^2 + 1}\right)^2.$$

Answer: $x = \dots$

Question 10. Calculate: $A = \frac{\left(\sqrt{-(-81)} \times 0.01\right) : (-0.1)^2 + \sqrt{(-0.01)^2} \times (-10)^3}{\left(10^2 \times (-0.9)^2\right) : \left(\sqrt{3^2 \times 2 + (-3)^2} - 2 \times (-3)^3\right)^2}$

Answer: $A = \dots$

TEST 2

EXAM 1

TREASURE HUNTING

Let's help the miner to go through the maze by answering 10 questions to reach the destination.



Question 1. Fill the suitable number in the following blank.

$$\sqrt{3} = \dots$$

(Round to three decimal places.)

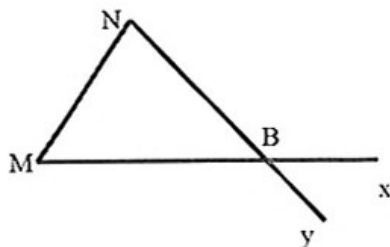
Question 2. Compare: $0.32145 \dots 0.3214(6)$

Question 3. Find the value of x such that $2.31x + 3.11 = 1.21 + 6.01$.

Answer: $x = \dots$

(Round to two decimal places.)

Question 4.



Note: Figure is not drawn to scale.

In the figure above, compare: $\widehat{NBx} \dots \widehat{BNM} + \widehat{NMB}$.

Question 5. Given a triangle ABC and the ratio of $\hat{A}$ to $\hat{B}$ to $\hat{C}$ is 1 to 2 to 3.

Find the measure of the angles A; B; C.

Answer: $\hat{A} = \dots^\circ$; $\hat{B} = \dots^\circ$; $\hat{C} = \dots^\circ$.

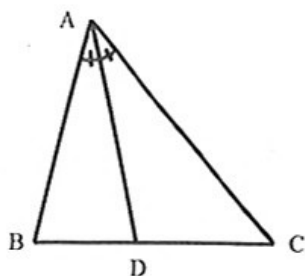
Question 6. The maximum value of $-13 - \sqrt{2x - 13}$ is ...

Question 7. Find the value of x such that $3 - (-1)^7 = \sqrt{2x - 1}$.

Answer: $x = \dots$

(Write your answer as a fraction in the simplest form.)

Question 8.



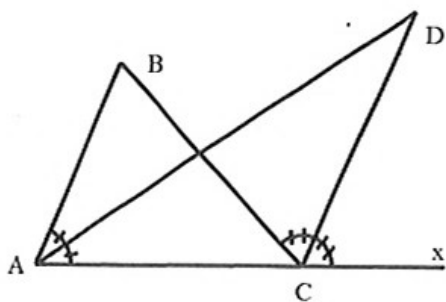
Note: Figure is not drawn to scale.

In the figure above, AD is the bisector of the angle BAC and $\widehat{B} - \widehat{C} = 30^\circ$. Find the measure of the angle ADC.

Answer: $\widehat{ADC} = \dots^\circ$.

Question 9. The greatest value of x such that $\frac{5}{\sqrt{x}-1}$ is an integer number is ...

Question 10.



Note: Figure is not drawn to scale.

In the figure above, AD and CD are the bisectors of $\widehat{BAX}$ and $\widehat{BCX}$, respectively. If $\widehat{ABC} = k \times \widehat{ADC}$ then $k = \dots$

(A) $\frac{1}{2}$

(B) 2

(C) 1

(D) 3

● EXAM 2 MATCHING

Choose pairs of numbers or calculations which have the same value in the following table cells then fill their sequence number in ○ below.



$\sqrt{\left(\frac{3}{7}\right)^2}$ 1	$\sqrt{4} + \sqrt{9}$ 2	$\sqrt{\frac{9}{16}} + \sqrt{\frac{25}{9}} - \sqrt{\frac{25}{144}}$ 3	The minimum value of $(1.2)^2 + \sqrt{x+1}$ 4
The negative value of x such that $x^2 + 2 = 11$ 5	The value of $\sqrt{a^2 + b^2}$, where $a = \sqrt{3}$; $b = \sqrt{4}$ 6	$1 + 4$ 7	$\sqrt{1+2+6+7}$ 8
$\sqrt{(-1) \times (-7)}$ 9	$\frac{3}{7}$ 10	The value of $a^3 - b^2$, where $a = 2$; $b = \sqrt{11}$ 11	The value of x such that $\sqrt{8x} - 2 = 10$ 12
The value of $a^4 - b^3$, where $a = \sqrt{1.1}$; $b = 1$ 13	The maximum value of $-(-3)^3 - \sqrt{2x+3}$ 14	The value of $\sqrt{\frac{a^2}{b^4}}$, where $a = 21$; $b = 10$ 15	4 16
The minimum value of $\sqrt{2x^2 + 9} + 4 \times 6$ 17	$9\sqrt{4}$ 18	The value of x such that $\sqrt{5x-1} - 2 = 1$ 19	The maximum value of $-\sqrt{1-x} + 1.44$ 20

Answer: Pairs of numbers or calculations which have the same value are:

○ and ○ ; ○ and ○ ; ○ and ○ ; ○ and ○ ;
 ○ and ○ ; ○ and ○ ; ○ and ○ ; ○ and ○ ;
 ○ and ○ ; ○ and ○ .



Let's reach the intellectual peak by answering the questions below.

Question 1. If $\sqrt{x} = 4$ ($x \geq 0$) then $x^2 = \dots$

Question 2. If $x^2 = 9$ then $x = \dots$

(A) 4.5

(B) 9 or -9

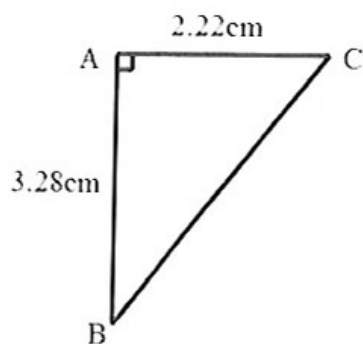
(C) -4.5

(D) 3 or -3

Question 3. Calculate: $A = \sqrt{\left(\frac{-2}{3}\right)^2} + \left(\sqrt{\frac{1}{3}}\right)^2$.

Answer: $A = \dots$

Question 4.



Note: Figure is not drawn to scale.

In the figure above, the area of the right triangle ABC is $\dots \text{ cm}^2$.

(Write your answer as a decimal in the simplest form.)

Question 5. Calculate: $B = (3.98 + 8.31) \times (9.11 - 5.78) : (5.76 + 3.54)$.

Answer: $B = \dots$

(Round to three decimal places.)

Question 6. Calculate: $C = 1.01 + 1.03 + 1.05 + \dots + 2.09$.

Answer: $C = \dots$

(Write your answer as a decimal in the simplest form.)

Question 7. Given a triangle ABC with $\frac{\hat{A}}{3} = \frac{\hat{B}}{2}$ and $\frac{\hat{B}}{4} = \frac{\hat{C}}{5}$.

Find the measure of the angles A; B; C.

Answer: $\hat{A} = \dots^\circ$; $\hat{B} = \dots^\circ$; $\hat{C} = \dots^\circ$.

Question 8. Find the maximum value of $A = -11 - \sqrt{9x - 18} + \sqrt{x - 2}$.

Answer: The maximum value of A is ...

Question 9. Find the value of x such that

$$\left(\sqrt{(-3.11)^2} + \left(\sqrt{1.89} \right)^2 \right) (1 - x) - (-1.2)^2 = \left(\sqrt{2 \times 1.78} \right)^2.$$

Answer: $x = \dots$

Question 10. Find the value of x such that $\sqrt{4x} + \sqrt{(-4)^2} x = (-2)^2 \times 3$.

Answer: $x = \dots$

ROUND 6

TEST 1

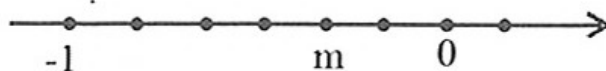
EXAM 1

JUMP OVER

You have to drive your car passing 10 obstacles to finish. In order to overcome each obstacle, you have to answer correctly one question in that obstacle. Are you ready?



Question 1.



Find the value of m .

Answer: $m = \dots$

(Write your answer as a fraction in the simplest form.)

Question 2. How many values of x such that $|x^2| = -23.312$?

(A) 1

(B) 0

(C) 3

(D) 2

Question 3. Given two triangles ABC and DEF . If $\triangle ABC = \triangle DEF$ and the perimeter of the triangle ABC is 23cm then the perimeter of the triangle DEF is ...cm.

Question 4. m^{12} is the result of the calculation:

(A) $(-m)^{18} : m^6$

(B) $(-m)^{17} : m^5$

(C) $m^6 \times m^2$

(D) $m^7 \times m^2$

Question 5. Suppose that y is directly proportional to x with proportionality constant 4; z is directly proportional to y with proportionality constant 2. Then z is directly proportional to x with proportionality constant ...

Question 6. Divide the number 270 into three parts. If 3 parts are in a ratio of 3:2:4 then the greatest part is equal to ...

Question 7. The perimeter of a triangle is 60cm and its sides are in a ratio of 3:5:7. The greatest side's length is ...cm.

Question 8. Anna today is twice as old as she was six years ago. How old is she today?

Answer: Today she is ... years old.

Question 9. Mark has one hundred and fifty-six marble balls and Tom has two hundred and forty-eight marble balls. How many marble balls does Tom need to give to Mark so that they will have the same number of marble balls?

Answer: ... marble balls.

Question 10. If $8x^3 = 125y^3$ and $xy = 1000$ then the value of $x - y$ is ..., ($y < 0$).

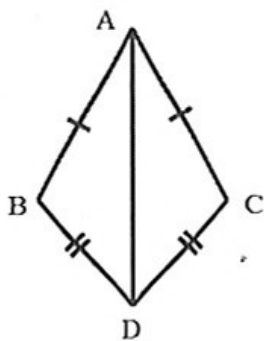
EXAM 2 **GRID INS**

Fill in the blanks with the correct answers to answer 10 questions below.



Question 1. Compare: $-\frac{27}{45}$ $-\frac{26}{65}$.

Question 2.



Note: Figure is not drawn to scale.

In the figure above, compare: $\widehat{BAD}$... $\widehat{CAD}$.

Question 3. How many values of x such that $2 \times 4 \leq 2^x \leq 8 \times 32$?

Answer: ...

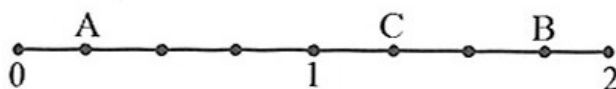
Question 4. Given two triangles MNP and DEF . If $\triangle MNP = \triangle DEF$ and $MN = 12\text{cm}$; $MP = 11\text{cm}$; $EF = 9\text{cm}$ then the perimeter of the triangle DEF is ...cm.

Question 5. How many seconds are there in OCTOBER?

Answer: There are ... seconds.

Question 6. Divide 62 into 3 parts. If 3 parts are in a ratio of $\frac{1}{2} : \frac{1}{3} : \frac{1}{5}$ then the least part is equal to ...

Question 7.

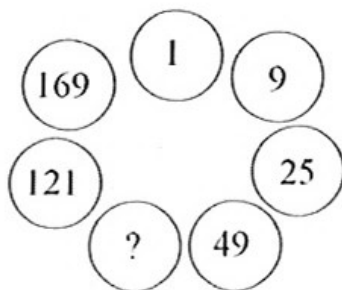


Find the value of $A + B + C$.

Answer: $A + B + C = \dots$

(Write your answer as a decimal in the simplest form.)

Question 8. Fill the suitable number in “?”.



Answer: ...

Question 9. Kate loves making cakes. She made one cake on Thursday; four cakes on Friday; nine cakes on Saturday; sixteen cakes on Sunday. If this pattern continues, how many cakes will Kate make on next Tuesday?

Answer: Kate will make ... cakes on next Tuesday.

Question 10. Suppose that $(x+6)^2 + (3y-9)^4 + |x-y-z+3| = 0$.

Find the value of $x + y + z$.

Answer: $x + y + z = \dots$

EXAM 3

ARRANGEMENT

Arrange numbers or calculations in order from least to greatest then fill their sequence numbers in $\bigcirc$ below.



$(-5^2) \times 2$	$-\left(\sqrt{(-2)^4} \times \sqrt{(-3)^4}\right)$	$-\left(\sqrt{\frac{1}{4}} \times \sqrt{9^{-1}}\right)^{-1}$	$-\left(\sqrt{\frac{13}{117}}\right)^{-1}$
1	2	3	4
$-\left(\sqrt{\frac{5}{125}}\right)^{-1}$	$(-3)^3 \times (0.5)^{-1}$	$(-3)^4 \times (-1)^7$	$-2^2 : 7^{-1}$
5	6	7	8
$-\sqrt{27} \times \sqrt{12}$	$(-4)^3$	$\frac{-7}{\sqrt{2^{-2}} + \sqrt{5^{-2}}}$	$(-2^{-3})^{-1}$
9	10	11	12
$-(5^2 + 6^2)$	$-\left(\sqrt{\frac{3}{27}}\right)^{-1} + \sqrt{(-3)^2}$	$-\left(\sqrt{\frac{1}{4}}\right)^{-2}$	$\frac{\sqrt{25}}{(-2^{-2})}$
13	14	15	16
$\frac{-1}{2^{-5}}$	$(-\sqrt{3^{-4}})^{-1}$	$5 \times (-2)^3$	$-5 : (2 \times 3)^{-1}$
17	18	19	20

The correct order is:

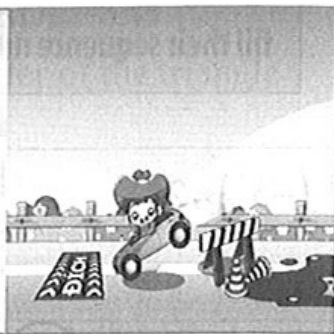
$\bigcirc \rightarrow \bigcirc \rightarrow \bigcirc \rightarrow \bigcirc \rightarrow \bigcirc \rightarrow \bigcirc \rightarrow \bigcirc \rightarrow \bigcirc \rightarrow \bigcirc \rightarrow \bigcirc$
 $\bigcirc \leftarrow \bigcirc \leftarrow \bigcirc \leftarrow \bigcirc \leftarrow \bigcirc \leftarrow \bigcirc \leftarrow \bigcirc \leftarrow \bigcirc \leftarrow \bigcirc$

TEST 2

EXAM 1

JUMP OVER

You have to drive your car passing 10 obstacles to finish. In order to overcome each obstacle, you have to answer correctly one question in that obstacle. Are you ready?



Question 1. Calculate: $-\frac{2}{7} + \frac{4}{9} = \dots$

(Write your answer as a fraction in the simplest form.)

Question 2. Find the integer value of x such that $3 \times 27 > 3^x > 9$.

Answer: $x = \dots$

Question 3. Suppose that y is directly proportional to x . If $x_1 = 3$ and $y_1 = 6$ then $x_2 = 5$ and $y_2 = \dots$

Question 4. Given two triangles ABC and MNP . If $\triangle ABC = \triangle MNP$ and $AB = 7\text{cm}$; $AC = 5\text{cm}$; $NP = 4\text{cm}$ then the perimeter of the triangle MNP is $\dots\text{cm}$.

Question 5. Given the triangle ABC and the ratio of the angles A to B to C is 3 to 5 to 2. Which is the greatest angle? What is the degree measure of this angle?

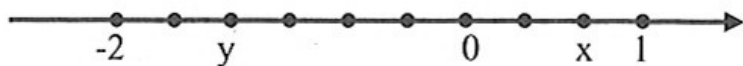
(A) $\hat{B} = 90^\circ$

(B) $\hat{C} = 48^\circ$

(C) $\hat{B} = 54^\circ$

(D) $\hat{C} = 90^\circ$

Question 6.



Calculate: $x + y = \dots$

Question 7. Find the value of x such that $\frac{3(x+2)}{2x+3} = \frac{7}{8}$, $\left(x \neq -\frac{3}{2}\right)$.

Answer: $x = \dots$

(Write your answer as a decimal in the simplest form.)

Question 8. If $\frac{x}{2} = \frac{y}{4}$ and $x^4 \times y^4 = 16$ then the value of $x + y$ is ..., ($x > 0$).

Question 9. Find the values of x ; y ; z such that $3x = 4y$; $2y = 5z$ and $2x - 3y + z = 8$.

Answer: $x = \dots$; $y = \dots$; $z = \dots$

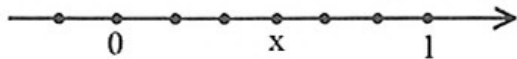
Question 10. If $\frac{x^3}{27} = \frac{y^3}{64} = \frac{z^3}{125}$ and $2x + 3y - z = 26$ then $x = \dots$; $y = \dots$; $z = \dots$

EXAM 2 **GRID INS**

Fill in the blanks with the correct answers to answer 10 questions below.



Question 1.



Find the value of x .

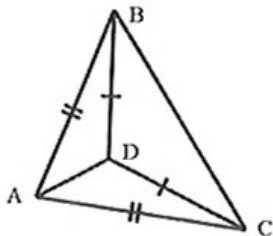
Answer: $x = \dots$

(Write your answer as a decimal in the simplest form.)

Question 2. Given two triangles ABC and MNP . If $\triangle ABC = \triangle MNP$ and $AC = 4\text{cm}$ then $MP = \dots\text{cm}$.

Question 3. Compare: $2^{3000} \dots 4^{1500}$.

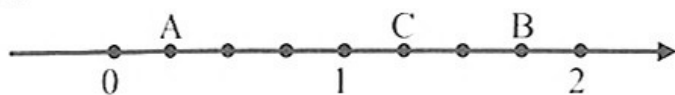
Question 4.



Note: Figure is not drawn to scale.

Given this figure compare: $\widehat{ADB} \dots \widehat{CDA}$.

Question 5.



The value of $(B \times C) : A = \dots$

(Write your answer as a decimal in the simplest form.)

Question 6. The perimeter of a triangle is 48cm and its sides are in a ratio of 4:3:5. The side lengths of the triangle are ...cm.

(Write your answer from least to greatest and use “;” between two numbers.)

Question 7. Divide the number 678 into three parts. If the first part and the second part are in a ratio of 5:7; the second part and the third part are in a ratio of 3:11 then the value of the second part is ...

Question 8. A half of the perimeter of a triangle is 40cm. If its sides are in a ratio of 6:4:5 then the greatest side length is ...cm.

Question 9. If $\frac{x-3}{4} = \frac{y+7}{5}$ and $2x - 3y = -1$ then $x = \dots$; $y = \dots$

Question 10. Find the value of x such that $\frac{x-7}{6} + \frac{x-11}{10} = \frac{x-8}{7} + \frac{x-10}{9}$.

Answer: $x = \dots$

EXAM 3 > ARRANGEMENT

Arrange numbers or calculations in order from least to greatest then fill their sequence numbers in ○ below.



$(-3)^5$	$(0.5)^{-2} \times (-13)$	$\frac{1}{(-2)^{-5}}$	$-\sqrt{4} \times \sqrt{289}$
1	2	3	4
$-\sqrt{(-2)^8}$	$-\left(\sqrt{\frac{1}{49}}\right)^{-1}$	$-\sqrt{36} : 2^{-2}$	$(-5)^2 \times (-2)$
5	6	7	8
$-(-3)^4 \times (-1)^{10}$	$-\left(\sqrt{\frac{1}{4}}\right)^{-1}$	$3 \times (-2^4)$	$-3 : (2 \times 5)^{-1}$
9	10	11	12
$(-2)^2 \times (-10)$	$\frac{-3}{\sqrt{2^{-4}}}$	$-\left(\sqrt{\frac{1}{9}} \times \sqrt{4^{-1}}\right)^{-1}$	$(-2)^2 \times (-5) \times 3$
13	14	15	16
$-2^2 \times 11$	$-\sqrt{(-3)^6}$	$(-3)^2 \times (-2)^3$	-2^6
17	18	19	20

The correct order is:

○ → ○ → ○ → ○ → ○ → ○ → ○ → ○ → ○ → ○

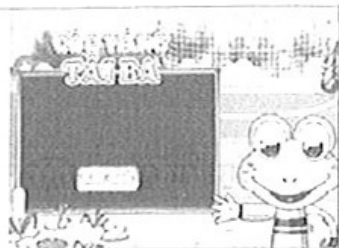
○ ← ○ ← ○ ← ○ ← ○ ← ○ ← ○ ← ○ ← ○ ← ○

ROUND 7

TEST 1

EXAM 1 → GOLDEN FROG

Choose the correct answer in 4 options.



Question 1. Suppose that y is inversely proportional to x with proportionality constant 6. If $x = 7$ then $y = \dots$

- (A) -1 (B) $\frac{7}{6}$ (C) 1 (D) $\frac{6}{7}$

Question 2. The graph of the function $y = 3x + 3$ passes through ...

- (A) M (3; 3) (B) K (-1; 0) (C) N (0; 0) (D) P (2; 3)

Question 3. Suppose that y is inversely proportional to x and $x = 3$ then $y = -2$. Which of the following expressions is correct?

- (A) $xy = 1$ (B) $xy = -6$ (C) $\frac{x}{y} = -6$ (D) $\frac{x}{y} = -\frac{3}{2}$

Question 4. Given a function $k(x) = \sqrt{5-x} + \sqrt{x+3}$. Which of the following expressions is correct?

- (A) $k(-1) = k(1)$ (B) $k(-3) < k(5)$
(C) $k(5) < k(-3)$ (D) $k(1) > k(-1)$

Question 5. Suppose that $5a = 2b$ and $7b = 3c$. Find the ratio of $(c - b)$ to $(b - a)$.

Answer: The ratio of $(c - b)$ to $(b - a)$ is ...

- (A) $\frac{20}{9}$ (B) $\frac{9}{20}$ (C) $\frac{4}{3}$ (D) $\frac{3}{4}$

Question 6. In the triangle ABC, the angle B is 4 times as large as angle A and the angle C is 3 times as large as angle A. Find the measure of the angle B.

- Ⓐ 45° Ⓑ 22.5° Ⓒ 90° Ⓓ 67.5°

Question 7. Find the values of x and y ($x, y < 0$) such that $3x = 2y$ and $x^2 - y^2 = -125$.

- Ⓐ $x = 5$ and $y = 10$ Ⓑ $x = -10$ and $y = -15$
Ⓒ $x = 10$ and $y = 15$ Ⓓ $x = -5$ and $y = -10$

Question 8. Given a function $y = f(x) = |x - 3| + 1$. If there is a point $B(m; 7)$ in the second quadrant and on the line $y = f(x)$ then the value of m is equal to ...

- Ⓐ -9 Ⓑ -3 Ⓒ 3 Ⓓ 9

Question 9. y is directly proportional to x with proportionality constant k . If $x_2 - x_1 = 4$ and $y_1 - y_2 = 12$ then $k = \dots$

- Ⓐ 4 Ⓑ 3 Ⓒ -3 Ⓓ -4

Question 10. Suppose that $3x = 5y$ and $xy = 60$ then the value of

$D = \sqrt{(x - y)(x + y)}$ is equal to ...

- Ⓐ 8 Ⓑ 6 Ⓒ 9 Ⓓ 10

EXAM 2**TREASURE HUNTING**

Let's help the miner to go through the maze by answering 10 questions to reach the destination.



Question 1. Find the positive value of x such that $|3x - 5| = 7$.

Answer: The positive value of x is ...

Question 2. Given a function $f(x) = \sqrt{2x + 3}$. Find the value of $f(3)$.

Answer: $f(3) = \dots$

Question 3. Suppose that x is inversely proportional to y with proportionality constant -7 .

If $y = \frac{1}{7}$ then $x = \dots$

Question 4. Suppose that $\frac{3x - 2y}{3y - 2x} = \frac{1}{2}$ then the ratio of x to y is ...

(Write your answer as a fraction in the simplest form.)

Question 5. Suppose that y is directly proportional to x with proportionality constant 7 , y is inversely proportional to z with proportionality constant 3 . Then which of the following answers is correct?

- Ⓐ z is inversely proportional to x with proportionality constant $\frac{7}{3}$.
- Ⓑ x is directly proportional to z with proportionality constant 21 .
- Ⓒ x is inversely proportional to z with proportionality constant $\frac{3}{7}$.
- Ⓓ z is directly proportional to x with proportionality constant 21 .

Question 6. Find the maximum value of $B = \frac{4}{(x + 7)^2 + 2}$.

Answer: The maximum value of B is ...

Question 7. Find the value of x such that $\left(\frac{1}{4}\right)^{3x+2} = \left(\frac{1}{2}\right)^{7x-4}$.

Answer: $x = \dots$

Question 8. Find the positive value of x such that $3|1-2x| + 2\left|\frac{1}{4} - \frac{1}{2}x\right| = 3^2 - 2^2$.

Answer: $x = \dots$

(Write your answer as a fraction in the simplest form.)

Question 9. Find the negative value of x such that $|x^4 + |2x - 3| + 4| = (-x^2)^2 + 9$.

Answer: $x = \dots$

Question 10. Suppose that $\frac{2x+7}{4} = \frac{3-5y}{7} = \frac{2x-5y}{9}$. Find the value of $B = x + y$.

Answer: $B = \dots$

(Write your answer as a fraction in the simplest form.)

EXAM 3 **GRID INS**

Fill in the blanks with the correct answers to answer 10 questions below.



Question 1. Given a function $g(x) = 2\sqrt{x-7}$. Find the value of $g(11)$.

Answer: $g(11) = \dots$

Question 2. Given a function $y = g(x) = \frac{15}{2x+1}$. If $y = 3$ then $x = \dots$

Question 3. Find the value of y such that $2^{y+1} = (-2)^8$.

Answer: $y = \dots$

Question 4. If x is directly proportional to y with proportionality constant 8, z is directly proportional to x with proportionality constant 4 then z is directly proportional to y with proportionality constant ...

Question 5. Given a function $g(x) = \frac{2}{3-x}$. Find the value of $g(1) + g(2)$.

Answer: $g(1) + g(2) = \dots$

Question 6. The maximum value of $A = \frac{6}{2(x-3)^2 + 3}$ is ...

Question 7. Find the value of n such that $\frac{1}{64} < \left(-\frac{1}{2}\right)^n < \frac{1}{8}$.

Answer: $n = \dots$

Question 8. Find the value of $x + y + z$ such that

$$(2x-3)^2 + (5y-4)^4 + \left(5 - \frac{1}{4}z\right)^2 \leq 0.$$

Answer: $x + y + z = \dots$

(Write your answer as a decimal in the simplest form.)

Question 9. x is inversely proportional to y with proportionality constant k . If

$$x_1 = 6, x_2 = 4 \text{ and } 3y_1 - 6y_2 = 22 \text{ then } k = \dots$$

Question 10. Given $A = 1 + 2 + 2^2 + 2^3 + \dots + 2^{59}$ and $B = 4^{25} \times 1024$.

Compare: $A \dots B$.

TEST 2

EXAM 1

GOLDEN FROG

Choose the correct answer in 4 options.



Question 1. Suppose that x is inversely proportional to y . If $x = 6$ then $y = \frac{1}{2}$. The proportionality constant is ...

(A) $\frac{1}{12}$

(B) 3

(C) 12

(D) $\frac{13}{2}$

Question 2. Given a function $f(x) = \frac{1}{3}x + 2$. The value of $f(-3)$ is ...

(A) 0

(B) 1

(C) 2

(D) 3

Question 3. Suppose that x is directly proportional to y with proportionality constant k_1 , y is inversely proportional to z with proportionality constant k_2 . Then the relationship between x and z is:

(A) x is directly proportional to z with proportionality constant $k_2 - k_1$.

(B) z is directly proportional to x with proportionality constant $k_1 \times k_2$.

(C) x is inversely proportional to z with proportionality constant $k_1 - k_2$.

(D) x is inversely proportional to z with proportionality constant $k_1 \times k_2$.

Question 4. The ratio of x to y is 7 to 3 and $2x - 3y = 10$ then

- (A) $x - y = -8$ (B) $x + y = 20$ (C) $x \times y = 72$ (D) $x : y = 3$

Question 5. Find the greatest integer value of x such that $\frac{5}{x-3}$ is an integer number.

- (A) $x = 8$ (B) $x = 4$ (C) $x = 2$ (D) $x = -2$

Question 6. Find the ratio of x to y such that $\frac{3x+2y}{2x-3y} = \frac{5x-y}{4x-6y}$.

Answer: The ratio of x to y is ...

- (A) $\frac{1}{5}$ (B) $-\frac{1}{5}$ (C) -5 (D) 5

Question 7. x is inversely proportional to y . If $y_1 = 9$; $y_2 = 8$ then

$$3x_1 + 6x_2 = \left(\frac{1}{13}\right)^{-1}$$

Find the value of y if $x = -12$.

- (A) $y = -1$ (B) $y = 1$ (C) $y = 12$ (D) $y = -12$

Question 8. Find the value of x such that $(4x-7)\left(\frac{7}{2}-2x\right) = 0$.

- (A) $x = 14$ (B) $x = \frac{7}{4}$ (C) $x = 28$ (D) $x = -\frac{7}{4}$

Question 9. Suppose that $(3x-2y)^4 + (4x-3z)^2 + |2x-3y+z-7| = 0$. Find the values of x, y, z .

- (A) $x = 6; y = 9; z = 8$ (B) $x = -6; y = 9; z = -8$
(C) $x = -6; y = -9; z = -8$ (D) $x = 6; y = 8; z = -9$

Question 10. Suppose that $2(x-3) = 3(y+2)$; $5(2-z) = 3(y+2)$
and $2x - 3y + z = -4$.

Find the value of $B = x - y + z$.

- (A) $B = 92$ (B) $B = 60$ (C) $B = -4$ (D) $B = 4$

EXAM 2**TREASURE HUNTING**

Let's help the miner to go through the maze by answering 10 questions to reach the destination.



Question 1. If y is inversely proportional to x and $x = 2$ then $y = -3$, then the proportionality constant is ...

Question 2. Calculate: $\sqrt{0.0081} - \sqrt{0.04} = \dots$

(Write your answer as a fraction in the simplest form.)

Question 3. Given a function $g(x) = |4 - x| - 3$. Compare: $g(-1) \dots g(9)$.

Question 4. If $a : b = 5 : 3$ and $b : c = 7 : 9$ then $\frac{a+b}{b-c}$ is equal to ...

- (A) -4 (B) $-\frac{1}{4}$ (C) $-\frac{28}{3}$ (D) $\frac{28}{3}$

Question 5. Suppose that x is inversely proportional to y with proportionality constant 5, z is inversely proportional to x with proportionality constant 3. Then which of the following answers is correct?

- (A) y is directly proportional to z with proportionality constant $\frac{5}{3}$.
(B) z is directly proportional to y with proportionality constant $\frac{5}{3}$.
(C) y is inversely proportional to z with proportionality constant $\frac{5}{3}$.
(D) z is inversely proportional to y with proportionality constant 15.

Question 6. In triangle ABC, a half of its perimeter is 35cm and the lengths of sides AB, AC, BC are in a ratio of 1:4:2. Which is the greatest side the triangle?

- (A) AB = 40cm (B) AC = 40cm
(C) AB = 20cm (D) AC = 20cm

Question 7. x is directly proportional to y with proportionality constant k . If $x_1 - x_2 = 9$ and $y_2 - y_1 = -3$ then $k = \dots$

Question 8. Find the maximum value of $B = \frac{\sqrt{x+3}+6}{2+\sqrt{x+3}}$.

Answer: The maximum value of B is ...

Question 9. Given $K = (-2)^0 + 2 + (-2)^2 + 2^3 + (-2)^4 + \dots + 2^{49} + (-2)^{50}$ and

$$H = -(-2)^{51}.$$

Compare: K ... H.

Question 10. Suppose that $2x = 5y$; $3y = 4z$. Find the value of $A = \frac{x-y+z}{3x-4y+5z}$.

Answer: A =

(Write your answer as a fraction in the simplest form.)

EXAM 3 GRID INS

Fill in the blanks with the correct answers to answer 10 questions below.



Question 1. Fill the suitable number in the following blank.

$$343 = \dots^3$$

Question 2. Given a function $h(x) = \frac{2}{\sqrt{3-x}}$. Find the value of $h(-1)$.

Answer: $h(-1) = \dots$

Question 3. Given a function $f(x) = \sqrt{5x-1}$. Compare: $f(1) \dots f\left(\frac{1}{5}\right)$.

Question 4. If $4a = 3b$ and $5a = 4c$ then $(c-a) : (b-a)$ is equal to ...

(Write your answer as a decimal in the simplest form.)

Question 5. If $2x = 3y$; $5y = 4z$ and $x - y - z = 9$ then the value of $x + y + z$ is ...

Question 6. Find the value of x such that $\sqrt{6x-9} = 2\sqrt{3}$.

Answer: $x = \dots$

(Write your answer as a decimal in the simplest form.)

Question 7. Find the values of x ; y ; z such that

$$(-3x+6)^{2010} + \left(4 - \frac{1}{3}y\right)^{402} + |7z-84| \leq 0.$$

Answer: The values of x ; y ; z are ..., respectively.

(Use “;” between two numbers.)

Question 8. Suppose that $\frac{7-3x}{5} = \frac{y+4}{3} = \frac{6x-y}{5}$. Find the ratio of y to x .

Answer: The ratio of y to x is ...

(Write your answer as a decimal in the simplest form.)

Question 9. If $\frac{x}{3} = \frac{y}{5} = \frac{z}{7}$ then the value of $P = \frac{3x+5y-2z}{3x-5y+2z}$ is equal to ...

Question 10. Given $A = \frac{2x-3}{7x+6}$. Find the least positive value of x ($x \in \mathbb{Z}$) such that A is a positive number.

Answer: $x = \dots$

ROUND 8

TEST 1

EXAM 1 MATCHING

Choose pairs of numbers or calculations which have the same value in the following table cells then fill their sequence number in below.



The value of $\frac{ x }{x}$, where is $x > 0$	The principal square root of 9	$\left(\frac{1}{9}\right)^{25} : \left(\frac{1}{3}\right)^{30}$	$\left(\frac{1}{2}\right)^{35} \times \left(\frac{1}{4}\right)^{10}$
The value of x; y; z such that $3x = 2y$; $7y = 5z$; $x - y + z = 32$	The value of x such that $3^{x-1} + 5 \times 3^{x-1} = 162$	The square of $\sqrt{3}$	The values of x; y such that $2^{x-1} \times 3^y = 12^x$
$1:81^5$	The minimum value of $A = x^4 + 2x^2 + 2$	The minimum value of $E = (x^4 + 5)^2$	The values of a; b; c such that $a : b : c$ $= 10 : 15 : 21$; $a + b + c = 92$
The maximum value of $F = [5 - 3(2x - 1)^2]^2$	$\left(\frac{1}{3}\right)^{20} : 3^{-10}$	$\frac{2^{45}}{2^{100}}$	The maximum value of $C = \frac{x^2 + 8}{2(x^2 + 2)}$
The square of the smallest prime number	$\left(\frac{-1}{3}\right)^{10}$	The values of a; b such that $\overline{ab}$ is the smallest 2-digit prime number	The value of x such that it is a natural number such that $a \times x = a$ ($a \neq 0$)

Answer: Pairs of numbers or calculations which have the same value are:

and ; and ; and ; and ;
 and ; and ; and ; and ;
 and ; and .



Choose the correct answer in 4 options.

Question 1. Find the values of x such that $x - 2\sqrt{x} = 0$.

- (A) 0; 3 (B) 2; 4 (C) 0; 4 (D) 0; 2

Question 2. An employee made 30 screws in 45 minutes. In 1 hour 15 minutes, how many screws has he made?

- (A) 48 (B) 50 (C) 51 (D) 52

Question 3. A horse has eaten a bale of grass for 4 days. A goat has eaten a bale of grass for 6 days. A sheep has eaten a bale of grass for 12 days. How long does it take for all of them to eat a bale of grass?

- (A) 2 days (B) 3 days (C) 4 days (D) 5 days

Question 4. A group of 40 workers complete a task in 12 hours. If 8 workers are added to the group, how long will it be decreased to?

- (A) 5 hours (B) 4 hours (C) 3 hours (D) 2 hours

Question 5. Which of the following functions satisfies

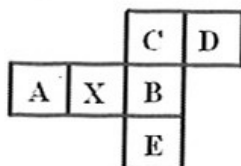
$$f(x_1 + x_2) = f(x_1) + f(x_2)?$$

- (A) $f(x) = 5$ (B) $f(x) = \frac{1}{x}$ (C) $f(x) = -2x$ (D) $f(x) = x^2$

Question 6. The currency unit used in Jordan is called the Dinar. The exchange rate is \$3 to 2 Dinars. How many dollars would you receive if you exchanged 22 Dinars?

- (A) \$11 (B) \$33 (C) 33 Dinars (D) 11 Dinars

Question 7.



If the net above is folded to make a cube, which letter is opposite X?

- (A) C (B) A (C) D (D) E

Question 8. Three pumps can remove a total of 1700 gallons of water per minute from a flooded mineshaft. If engineers want to remove at least 5500 gallons per minute, how many pumps will they need operating?

- (A) 7 pumps (B) 10 pumps (C) 9 pumps (D) 8 pumps

Question 9. Simplify: $S = 1 + 2 + 5 + 14 + \dots + \frac{3^{n-1} + 1}{2}$, where n a positive integer.

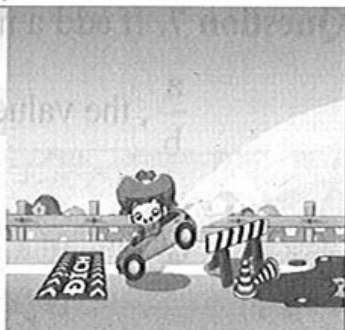
- (A) $\frac{2n + 3^n - 1}{4}$ (B) $\frac{2n + 3^n}{4}$ (C) $\frac{2n + 3^n - 1}{2}$ (D) $\frac{2n + 3^n + 1}{2}$

Question 10. The lengths of three sides in a triangle are $\sqrt{13}$; $\sqrt{17}$; $2\sqrt{5}$. The area of the triangle is ...

- (A) 10 (B) 8 (C) 7 (D) 5

EXAM 3 JUMP OVER

You have to drive your car passing 10 obstacles to finish. In order to overcome each obstacle, you have to answer correctly one question in that obstacle. Are you ready?



Question 1. n is an integer number. The values of n such that the fraction

$$B = \frac{6n+5}{2n-1} \text{ is an integer number is ...}$$

- (A) 1 (B) 0;1 (C) 0;3 (D) -1;0;1

Question 2. Calculate:

$$\frac{(1+2+3+\dots+100) \times \left(\frac{1}{3} - \frac{1}{5} - \frac{1}{7} - \frac{1}{9} \right) \times (6.3 \times 12 - 21 \times 3.6)}{\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots + \frac{1}{100}} = \dots$$

- (A) -1 (B) 0 (C) 1 (D) 2

Question 3. Find the values of x such that $|3x-5|=4$.

- (A) 3 and $\frac{1}{3}$ (B) 6 and $\frac{1}{3}$ (C) 3 and $\frac{1}{5}$ (D) 6 and $\frac{2}{3}$

Question 4. How many ways are there to write the number 64 as a^n , where a is an integer number?

- (A) 3 ways (B) 4 ways (C) 6 ways (D) 12 ways

Question 5. Find integer numbers x and y such that $\frac{5}{x} + \frac{y}{4} = \frac{1}{8}$ and $x; y < 4$.

- (A) $x=8; y=3$ or $x=40; y=1$ (B) $x=-8; y=-3$ or $x=-40; y=-1$
(C) $x=8; y=-3$ or $x=40; y=-1$ (D) $x=-8; y=3$ or $x=-40; y=1$

Question 6. Simplify: $B = 3^{100} - 3^{99} + 3^{98} - 3^{97} + \dots + 3^2 - 3 + 1$.

- (A) $B = \frac{1+3^{101}}{2}$ (B) $B = \frac{1+3^{101}}{4}$ (C) $B = \frac{1+3^{100}}{4}$ (D) $B = \frac{1+3^{100}}{2}$

Question 7. If add a number to both the numerator and the denominator of the fraction

$\frac{a}{b}$, the value of this fraction is not changed. The fraction $\frac{a}{b} = \dots$

(A) 0

(B) -1

(C) 1

(D) $\frac{1}{2}$

Question 8. The ratio of three side lengths of a triangle is 2:3:4. What is the ratio of lengths of three altitudes of this triangle respectively?

(A) 6:4:3

(B) 4:3:2

(C) 2:3:4

(D) 3:4:6

Question 9. Given the isosceles triangle ABC with $AB = AC$, the altitude AH and $\widehat{BAC} = 40^\circ$. The points E; F are on AH; AC respectively such that $\widehat{EBA} = \widehat{FBC} = 30^\circ$. What is the measure of $\widehat{AEF}$?

(A) 40°

(B) 50°

(C) 70°

(D) 80°

Question 10. Find the sum of two natural numbers a and b such that

$$(2008 \times a + 3 \times b + 1) \times (2008^a + 2008 \times a + b) = 225.$$

(A) 8

(B) 10

(C) 12

(D) 4

TEST 2

EXAM 1 MATCHING

Choose pairs of numbers or calculations which have the same value in the following table cells then fill their sequence number in below.



The value of $\frac{ x }{x}$ if x is a negative number 1	The value of x such that both x and $x + \frac{1}{x}$ are integer numbers 2	The value of a such that $ a = 9$ 3	The value of n which is a rational number and satisfies $0.2 : 1\frac{1}{5} = \frac{2}{3} : (6n + 7)$ 4
The maximum value of $B = \frac{18}{2(x-1)^2 + 3}$ 5	$\left(\frac{1}{4}\right)^{15} : \left(\frac{1}{2}\right)^{10}$ 6	The greatest negative integer number 7	$\frac{9^{25}}{(-3)^{40}}$ 8
$(-4)^{-10}$ 9	Find n such that $ n = 1$ 10	The value of x such that $x^3 = 512$ 11	The value of x such that $x^2 = 81$ 12
The minimum value of $A = x^2 + 7 - 5$ 13	The principal square root of 25 14	The value of the coefficient a such that the point $A(-6; 3)$ is on the line $y = ax$ 15	The square of $\sqrt{5}$ 16
The positive value of x such that $x^2 = 64$ 17	The maximum value of $B = \frac{8}{4(x^4 + 1)}$ 18	$\left(\frac{1}{3}\right)^{10} : \left(\frac{1}{9}\right)^{10}$ 19	The least common multiple of 2 and 3 20

Answer: Pairs of numbers or calculations which have the same value are:

and ; and ; and ; and ;
 and ; and ; and ; and ;
 and ; and .

EXAM 2**GOLDEN FROG**

Choose the correct answer in 4 options.



Question 1. How many integer values of x such that the value of $A = \frac{\sqrt{x} + 1}{\sqrt{x} - 3}$ is an integer number?

- (A) 3 (B) 4 (C) 5 (D) 6

Question 2. 10 boys catch 10 fish in 5 minutes. How long does it take for 50 boys to catch 50 fish?

- (A) 5 minutes (B) 10 minutes (C) 25 minutes (D) 50 minutes

Question 3. Each of Tim and Daisy takes two tablets of vitamin C per day; Hannah takes one tablet per day. The number of drugs is enough for three people to use in 30 days. If Hannah also takes two tablets per day, how many days will it take them to take all the number of tablets?

- (A) 26 (B) 18 (C) 20 (D) 25

Question 4.

1	a	3
3	5	b

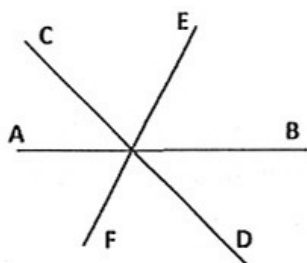
The value of b is ...

- (A) 1 (B) 7 (C) 3 (D) 5

Question 5. 500 soldiers in a fort had enough food for 30 days. After 6 days, some soldiers were sent to another fort and thus the food lasted for 32 more days. How many soldiers had left the fort?

- (A) 125 soldiers (B) 375 soldiers
(C) 225 soldiers (D) 167 soldiers

Question 6.



How many pairs of vertical opposite angles in the picture above?

(Do not count straight angle)

- (A) 5 (B) 6 (C) 10 (D) 15

Question 7. Three teams of workers have to transport 1530kg of commodity from the warehouse to three spots in order, where distances from their place to the warehouse are respectively 1500m; 2000m; 3000m. Split commodity for each team such that volume of commodity is inversely proportional to the moving distance. The volume of commodity of three teams are respectively ...kg.

- (A) 680; 510; 340 (B) 750; 350; 250
(C) 810; 240; 120 (D) 730; 450; 350

Question 8. Given a triangle ABC, $\widehat{BAC} = 20^\circ$, $AB = AC$. Let M is on AB such that $MA = BC$. What is the measure of the angle AMC?

- (A) 120° (B) 110° (C) 150° (D) 160°

Question 9. If 270kg of corn could feed 42 horses for 21 days, for how many days would 360kg of it feed 21 horses?

- (A) 56 days (B) 10.5 days (C) 42 days (D) 31.5 days

Question 10. If 18 binders can bind 900 books in 10 days, how many binders will be required to bind 660 books in 12 days?

- (A) 11 binders (B) 90 binders (C) 50 binders (D) 16 binders

EXAM 3 JUMP OVER

You have to drive your car passing 10 obstacles to finish. In order to overcome each obstacle, you have to answer correctly one question in that obstacle. Are you ready?



Question 1. The numerator of a fraction is 9. The value of that fraction is greater than $\frac{11}{15}$ and less than $\frac{11}{14}$. The denominator is ...

- (A) 12 (B) 10 (C) 11 (D) 13

Question 2. Find the rational number x such that $\frac{3}{4} + \frac{1}{4} : x = -3$.

- (A) $x = \frac{1}{5}$ (B) $x = \frac{1}{15}$ (C) $x = -\frac{1}{5}$ (D) $x = -\frac{1}{15}$

Question 3. $A = 3.4 \times 10^{-8}$ and $B = 34 \times 10^{-9}$. Find the integer number k such that $A = k \times B$.

- (A) 10 (B) 1 (C) 100 (D) 1000

Question 4. If $S_n = 1 - 2 + 3 - 4 + \dots + (-1)^{n-1} \times n$, with $n = 1; 2; 3 \dots$

Calculate: $S_{35} + S_{60} = \dots$

- (A) -12 (B) 12 (C) -24 (D) 24

Question 5. Simplify: $A = \frac{4^5 \times 9^4 - 2 \times 6^9}{2^{10} \times 3^8 + 6^8 \times 20}$.

- (A) $-\frac{1}{6}$ (B) $\frac{1}{3}$ (C) $-\frac{1}{3}$ (D) $\frac{1}{6}$

Question 6. Two numbers A and B are inversely proportional and they are positive. If the value of A is increased by 10% then the value of B will be decreased by ...

- (A) 10% (B) 9% (C) $9\frac{1}{11}\%$ (D) $90\frac{10}{11}\%$

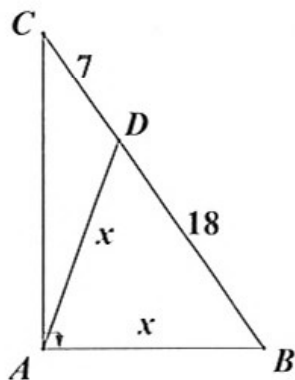
Question 7. The lengths of three altitudes of a triangle are 4; 12; x . The value of x is ...

- (A) 4 (B) 4 or 5 (C) 6 (D) 6 or 7

Question 8. Given a triangle ABC with $\widehat{ACB} = 30^\circ$ and the altitude AH , $AH = \frac{1}{2}BC$. D is the midpoint of AB . What is the measure of $\widehat{ACD}$?

- (A) 15° (B) 20° (C) 30° (D) 40°

Question 9. Find x in the below figure if $CD = 7$; $DB = 18$; $\widehat{BAC} = 90^\circ$.



Note: Figure is not drawn to scale.

- (A) 13 (B) 17 (C) 15 (D) 16

Question 10. The sum of two numbers x and y such that $\frac{1+3y}{12} = \frac{1+5y}{5x} = \frac{1+7y}{4x}$ is ...

- (A) $\frac{29}{15}$ (B) $\frac{31}{14}$ (C) $\frac{24}{49}$ (D) $\frac{12}{23}$

ROUND 9

EXAM 1 GRID INS

Fill in the blanks with the correct answers to answer 10 questions below.



Question 1. The average of six numbers is 4. If a seventh number is added, the average of seven numbers will be 5. Then the seventh number is ...

Question 2. A set of numbers $\{a_1; a_2; a_3; \dots; a_{2015}\}$ has 2015 different numbers. The average of this set is 25. The average of the set $\{a_1; a_2; a_3; \dots; a_{2015}; 25\}$ is ...

Question 3.

$\frac{20}{x}$	9	2
3	x	7
8	1	$x+1$

If the sum of numbers in rows, columns, diagonals are equal then the value of x is ...

Question 4. If $\left(\frac{3x}{4} + 5\right) - \left(\frac{2x}{3} - 4\right) + \left(\frac{x}{3} - 3\right) = \left(\frac{x}{3} + 4\right) + \left(\frac{x}{6} + 1\right)$ then the value of x is ...

Question 5. Find the natural number $\overline{abc}$ ($0 < a < b < c$) such that

$$\overline{abc} + \overline{bca} + \overline{cab} = 666.$$

Answer: $\overline{abc} = \dots$

Question 6. Given two polynomials $f(x) = mx^2 + 3x - (m+2)$ and

$$g(x) = x^2 - 3mx + 2m. \text{ Find the value of } m \text{ such that } f(-1) = g(2).$$

Answer: $m = \dots$

(Write your answer as a decimal in the simplest form.)

Question 7. If a and b are coprime then the greatest common factor of a^2 and $(a + b)$ will be

Question 8. If $\frac{x}{y} = \frac{3}{4}$ then the value of $B = \frac{18x - 45y}{14x - 42y}$ is ...

Question 9. Given the function $f(x) = ax^2 + bx + c$ such that $f(0) = -1$; $f(1) = -2$; $f(2) = 3$. Then $(a; b; c) = (\dots)$.

(Write your answer in order and use “;” between two numbers.)

Question 10. Given the function $f(x) = ax^2 + bx + c$ such that $f(x) = f(-x)$ with any value of x . So that $b = \dots$

EXAM 2

KID CHAMPION

Let's reach the intellectual peak by answering the questions below.



Question 1. In the triangle ABC , if $AB > BC > AC$ then which of the following sentences is true?

(A) $\hat{C} > \hat{B} > \hat{A}$

(B) $\hat{C} > \hat{A} > \hat{B}$

(C) $\hat{A} > \hat{B} > \hat{C}$

(D) $\hat{B} > \hat{A} > \hat{C}$

Question 2. The value of the expression $3m - 7n$, where $m = -2$ and $n = -3$, is ...

Question 3. Given $M = \left(-\frac{3}{2}x^3y^2\right) \times \left(\frac{2}{3}x^2y^3\right)$. What is the degree of M ?

Answer: The degree of M is...

Question 4. The value of the polynomial $A = x(x - y) - y(y - x)$, where $x + y = 0$, is...

(A) $A = -2y^2$

(B) $A = 0$

(C) $A = -2x^2$

(D) $A = 2y^2$

Question 5. Find the value of the polynomial $D = 1 + x^3 + x^5 + x^7 + \dots + x^{2015}$, where $x = -1$.

Answer: $D(-1) = \dots$

Question 6. A party of 18 people went to a restaurant. Each of them chooses a meal that cost \$21, but four of them forgot to bring their money. In order to settle the total bill, each of people who brought their money had to pay an extra \$...

Question 7. Find the value of k such that

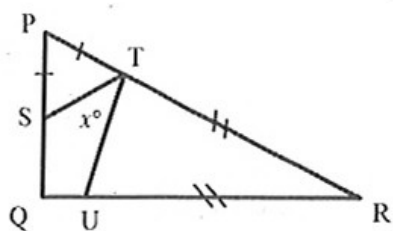
$$kx^3y + (k+2)x^3y + (k+4)x^3y + \dots + (k+2010)x^3y = 11236x^3y$$

Answer: $k = \dots$

Question 8. How many integers from 1 to 1000 are divisible by neither 6 nor 9?

Answer: ... numbers.

Question 9.



Note: Figure is not drawn to scale.

The right triangle PQR ($\hat{Q} = 90^\circ$), the isosceles triangles PST and RTU are shown in the picture above. The measure of the angle STU is x° . What is the value of x ?

Answer: $x = \dots$

Question 10. Given the polynomial $f(x)$ such that $2015f(x) + xf(-x) = x + 1$ with any value of x . So that $f(-2015) = \dots$

(Write your answer as a fraction in the simplest form.)

EXAM 3**TREASURE HUNTING**

Let's help the miner to go through the maze by answering 10 questions to reach the destination.



Question 1. In triangle ABC, the angle at A is the smallest angle then

- (A) BC is the greatest side. (B) AC is the smallest side.
(C) BC is the smallest side. (D) AC is the greatest side.

Question 2. The value of the polynomial $P(x) = x^4 - 2x^2 + 3$, where $|x| = 1$, is ...

Question 3. The value of the polynomial $C = 1 - x^3 - x^5 - x^7 - \dots - x^{2015}$, where $x = -1$, is ...

Question 4. Given two polynomials $F(x) = (m - 1)x^2 + 3x - 2$ and $G(x) = 5x + 3$. Find the value of m such that $F(-2) = G(1)$.

Answer: $m = \dots$

Question 5. In a triangle, the lengths of its sides are $7\frac{1}{2}$; 11; x , in centimeters, where x is an integer number. What is the smallest possible value of x ?

Answer: $x = \dots$

Question 6. If $x = a^2 + 2ab + b^2$ and $y = a^2 - 2ab + b^2$ then simplify the polynomial $M = 2y - x - \{2x - y - [y + 3x - (5y - x)]\}$.

- (A) $M = ab^2$ (B) $M = 4ab$ (C) $M = ab$ (D) $M = 3a^2b$

Question 7. Find a 2-digit natural number such that it is equal to two times product of its digits.

Answer: ...

Question 8. Adam bought a number of ping-pong balls in a store in Texas, where a 5% sales tax is added to every purchase. If he didn't have to pay tax, he could have bought 3 more balls for the same amount of money. How many balls did he buy?

Answer: He bought ... balls.

Question 9. If 7^{1983} is divided by 100 then the remainder is ...

Question 10. The value of the polynomial $B = x^2 - 3x$ is positive when ...

- (A) $x < 0$ or $x > 3$ (B) $x \leq 0$ (C) $x \geq 3$ (D) $0 \leq x \leq 3$

ROUND 10

EXAM 1

GOLDEN FROG

Choose the correct answer in 4 options.



Question 1. Find the degree of the below polynomial:

$$3x^2 + 2x^4 - x + 3x^3 - 4x^3 - 3x^2 + x^4 - 2 + 3x^5$$

- (A) 4 (B) 3 (C) 5 (D) 2

Question 2. Find the sum of the solutions of the below polynomial:

$$3x^3 + 2x^4 - 4 - 3x^3$$

- (A) 0 (B) 4 (C) $2\sqrt{2}$ (D) $-2\sqrt{2}$

Question 3. Given $P(x) = 3x^2 - 2x^3 + 2x + 1$ and $Q(x) = 2x^3 - 3x^2 + 7x - 8$.
 $P(x) - Q(x) = \dots$

- (A) $4x^3 - 6x^2 + 5x - 9$ (B) $5x^3 - 5x^2 + 9x - 7$
(C) $-4x^3 + 6x^2 - 5x + 9$ (D) $9x - 7$

Question 4. The lengths of three sides of an isosceles triangle are 7cm; xcm; 3cm, then its perimeter is ...

- (A) 17cm (B) 13cm (C) 20cm (D) 15cm

Question 5. Given the polynomial $P(x) = ax + b$. If $P(1) = 3$ and $P(-2) = -3$ then $P(x) = \dots$

- (A) $-2x + 1$ (B) $-2x - 1$ (C) $2x + 1$ (D) $2x - 1$

Question 6. Find the value of x such that

$$2 \times (3x^3 - 2x^2 + x - 3) + (2x + 4x^2 - 6x^3 + 2) = 3.$$

- (A) $x = \frac{4}{3}$ (B) $x = \frac{3}{4}$ (C) $x = -1$ (D) $x = \frac{7}{4}$

Question 7. Find the value of the polynomial

$$P(x) = x + 3x^3 + 5x^5 + 7x^7 + \dots + 199x^{199}, \text{ where } x = -1.$$

- (A) $P(-1) = 10000$ (B) $P(-1) = -10000$
(C) $P(-1) = -199$ (D) $P(-1) = 199$

Question 8. The right triangle PQR has $\hat{P} = 90^\circ$, QS and RS are the bisectors of angles $\widehat{PQR}$ and $\widehat{QRP}$ respectively. Find the measure of the angle QSR.

- (A) $\widehat{QSR} = 135^\circ$ (B) $\widehat{QSR} = 90^\circ$
(C) $\widehat{QSR} = 120^\circ$ (D) $\widehat{QSR} = 100^\circ$

Question 9. Anna is walking in south direction. After walking 25m, she goes 60m west then she is at a distance of ... meters from the starting point.

- (A) 50 (B) 60 (C) 56 (D) 65

Question 10. The number of solutions of the below polynomial

$$3x^2 + 8x^3 + x^4 + 9 + (-2x)^3 - 3x^2 \text{ is}$$

- (A) 0 (B) 1 (C) 2 (D) 4

EXAM 2 MATCHING

Choose pairs of numbers or calculations which have the same value in the following table cells then fill their sequence number in below.



The degree of $3x^3y^2z$ 	The degree of $-2x^2yz \times (-3xy^2z)$ 	The degree of $-2x^2yz^2 + 2xyz^3$ 	The degree of $3x^5 + 2x - 3x^2 - 3x^5$
The sum of $3xy^2$; $-2xy^2$; $\frac{2}{3}y^2x$ 	The number of solutions of polynomial $x^4 + 10$ 	The solution of polynomial $3x - 18$ 	The sum of solutions of $x^3 + x^2$
The solution of polynomial $(3x^2)^3$ 	The solution of polynomial $ -x + 8 $ 	The sum of the solutions of $(x-1)^2 + (y-z)^2 + (x-z)^2 = 0$ 	The value of $3x^2 + 5x - 6$, where $x = 1$
The sum of the solutions of $4x^3 + 2x^2$ 	The product of the solutions of $x^2 - 1$ 	The value of $\frac{4x^2 - 4x - 5}{4}$, where $x = -\frac{1}{2}$ 	The value of $\frac{4x^2 - 4x + 1}{x^9 + 2016} - 3$, where $x = \frac{1}{2}$
The value of $x^2 - 7x - 15$, where $x = -2$ 	The product of the solutions of $x^2 - 2x - 3$ 	The solution of polynomial $3(2x - 10)$ 	The product of $\frac{1}{2}xy$ and $\frac{10}{3}y$

Answer: Pairs of numbers or calculations which have the same value are:

and ; and ; and ; and ;
 and ; and ; and ; and ;
 and ; and .

EXAM 3 JUMP OVER

You have to drive your car passing 10 obstacles to finish. In order to overcome each obstacle, you have to answer correctly one question in that obstacle. Are you ready?



Question 1. In a secondary school, the ages of the teachers were as follows

26; 25; 32; 30; 42; 45; 50; 49; 36; 35.

What is the average of their ages?

- (A) 35 (B) 36 (C) 37 (D) 38

Question 2. The product of two consecutive natural numbers is always

- (A) a perfect square (B) a prime number
(C) an odd number (D) an even number

Question 3. What is the degree of the polynomial $2xy^2 - 3xy^2 + 5xy - 3x + 2y$?

- (A) 3 (B) 2 (C) 1 (D) 0

Question 4. Given the polynomial $P(x) = 2x^3 + 3x^2 - mx^3 - 3x^2 + 5x^2$.

If the degree of P is 2 then

- (A) $m = 1$ (B) $m = 2$ (C) $m = -1$ (D) $m = 3$

Question 5. Find the polynomial A such that

$$A + 3x^2 - 5x + x^3 - 1 = x^3 + 2x^2 - x + 3.$$

- (A) $A = 2x^3 + 5x^2 - 6x - 4$ (B) $A = 5x^2 + 4x - 3$
(C) $A = -x^2 + 4x + 4$ (D) $A = 2x^3 + x^2 + 4x + 4$

Question 6. Find the value of x such that $3x - \frac{2}{3}x + \frac{1}{2}x - \frac{3}{4}x = \frac{5}{4}$.

- (A) $x = 3$ (B) $x = 5$ (C) $x = \frac{3}{5}$ (D) $x = \frac{5}{3}$

Question 7. What is the average of 15 consecutive integers starting at 15?

- (A) 22 (B) 15 (C) 30 (D) 26

Question 8. The number of solutions of $(2x - 3)^2 + (3x + \sqrt{3})^2 = 0$.

Ⓐ 0

Ⓑ 1

Ⓒ 2

Ⓓ 3

Question 9. Find the maximum value of $A = \frac{6}{x^2 + 3x^4 + 2}$.

Ⓐ 2

Ⓑ 3

Ⓒ 4

Ⓓ 6

Question 10. The isosceles right triangle ABC ($\hat{A} = 90^\circ$) has the median line

$AM = 2\sqrt{2}\text{cm}$. What is the area of the triangle ABC?

Ⓐ $S_{ABC} = 12\text{cm}^2$

Ⓑ $S_{ABC} = 4\text{cm}^2$

Ⓒ $S_{ABC} = 8\text{cm}^2$

Ⓓ $S_{ABC} = 16\text{cm}^2$

PART II. ANSWERS

ROUND 1

TEST 1

EXAM 1.

The correct order is:

3 → 7 → 9 → 1 → 10 → 12 → 18 → 16 → 8 → 2 → 6 → 19 → 20 → 13
→ 15 → 5 → 17 → 11 → 4 → 14

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	A	C	B	A	B	A	D	D	A	A

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	0.025	1.75	2	84	4	7	1	9	2	68

TEST 2

EXAM 1.

The correct order is

4 → 7 → 9 → 11 → 12 → 17 → 19 → 13 → 3 → 6 → 10 → 14 → 18
→ 20 → 1 → 2 → 5 → 15 → 8 → 16

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	B	C	A	D	C	D	B	C	B	A

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	15	27	1	-1	1	0	0.5	1	15;2	6

ROUND 2**TEST 1****EXAM 1.**

Pairs of numbers or calculations which have the same value are:

1 - 7; 2 - 10; 3 - 13; 4 - 11; 5 - 8; 6 - 9; 12 - 17; 14 - 20; 15 - 18; 16 - 19.

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	-2.5	-5	41	-0.375	>	0.45	1.5	-1	<	0.4; 5; -0.4

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	A	C	D	C	B	B	C	B	D	A

TEST 2**EXAM 1.**

Pairs of numbers or calculations which have the same value are:

1 - 20; 2 - 10; 3 - 9; 4 - 6; 5 - 11; 7 - 12; 8 - 15; 13 - 17; 14 - 18; 16 - 19

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	2.25	5	0.267	<	30	0.6	<	1	<	6

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	B	C	A	B	A	D	A	D	B	C

ROUND 3**TEST 1****EXAM 1.**

The correct order is

7 → 12 → 19 → 1 → 18 → 20 → 6 → 2 → 15 → 5 → 9 → 16 → 11 → 13
 → 4 → 8 → 17 → 3 → 10 → 14

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	7	$\frac{4}{3}$	B	45	$\frac{1}{3}$	45	C	4	$\frac{26}{45}$	3;3

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	-5	D	B	-3	A	C	1	45	A	D

TEST 2

EXAM 1.

The correct order is

$2 \rightarrow 4 \rightarrow 9 \rightarrow 11 \rightarrow 17 \rightarrow 20 \rightarrow 3 \rightarrow 12 \rightarrow 18 \rightarrow 5 \rightarrow 15 \rightarrow 6 \rightarrow 8 \rightarrow 14$
 $\rightarrow 13 \rightarrow 10 \rightarrow 1 \rightarrow 19 \rightarrow 7 \rightarrow 16$

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	B	C	135	A	A	3	0	C	7; -3	C

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	-3	6	2	3	A	D	4	45	$\frac{1}{4}$	80

ROUND 4

TEST 1

EXAM 1.

Question	1	2	3	4	5	6	7	8	9	10
Answer	4	2; 3	4	>	135	1	0.5	-9	28; 17	150

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	2	A	60	-6	13	=	8	A	-36; -24; -32	$\frac{12}{5}; 4$

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	C	D	A	C	B	C	B	A	C	B

TEST 2**EXAM 1.**

Question	1	2	3	4	5	6	7	8	9	10
Answer	4	90	<	2	1	144	25;15	240	-30	-7

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	32	D	-4	90	$-\frac{1}{9}$	72	=	8;6	6;4;3	$\frac{7}{2}; -\frac{1}{2}$

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	A	B	D	C	D	A	B	B	A	B

ROUND 5

TEST 1

EXAM 1.

Question	1	2	3	4	5	6	7	8	9	10
Answer	0	5.9368	3	6	70	-1	2	118	12	20

EXAM 2.

Pairs of numbers or calculations which have the same value are:

1 - 7; 2 - 11; 3 - 8; 4 - 15; 5 - 20; 6 - 12; 9 - 19; 10 - 17; 13 - 16; 14 - 18

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	3	12	0.3	90	5	2.188	87.51	$\frac{30;70}{80}$	2	-1

TEST 2

EXAM 1.

Question	1	2	3	4	5	6	7	8	9	10
Answer	1.732	<	1.78	=	$\frac{30;60}{90}$	-13	$\frac{17}{2}$	105	36	B

EXAM 2.

Pairs of numbers or calculations which have the same value are:

1 - 10; 2 - 7; 3 - 19; 4 - 20; 5 - 11; 6 - 9; 8 - 16; 12 - 18; 13 - 15; 14 - 17

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	256	D	1	3.6408	4.401	85.25	$\frac{72:48:}{60}$	-11	0	2

ROUND 6**TEST 1****EXAM 1.**

Question	1	2	3	4	5	6	7	8	9	10
Answer	$-\frac{1}{3}$	B	23	A	8	120	28	12	46	-30

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	<	=	6	32	2678400	12	3.25	81	36	-9

EXAM 3.

The correct order is:

7 → 10 → 13 → 6 → 1 → 19 → 2 → 17 → 20 → 8 → 16 → 9 → 11 → 18
 → 12 → 3 → 5 → 15 → 4 → 14

TEST 2

EXAM 1.

Question	1	2	3	4	5	6	7	8	9	10
Answer	$\frac{10}{63}$	3	10	16	A	-1	-2.7	3	$\frac{160:120:48}{48}$	6:8:10

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	0.5	4	= .	=	8.75	12:16:20	126	32	19:13	1

EXAM 3.

The correct order is:

1 → 9 → 19 → 20 → 16 → 2 → 8 → 11 → 17 → 13 → 4 → 3 → 12
 → 18 → 7 → 5 → 14 → 6 → 15 → 10

ROUND 7

TEST 1

EXAM 1.

Question	1	2	3	4	5	6	7	8	9	10
Answer	D	B	B	D	A	C	B	B	C	A

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	4	3	-49	$\frac{7}{8}$	C	2	8	$\frac{17}{14}$	-1	$\frac{1}{10}$

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	4	2	7	32	3	2	4	22.3	-22	<

TEST 2**EXAM 1.**

Question	1	2	3	4	5	6	7	8	9	10
Answer	B	B	D	B	A	C	A	B	C	D

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	-6	$\frac{-11}{100}$	=	C	A	B	3	3	<	$\frac{9}{29}$

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	7	1	>	0.75	-45	3.5	2;12;12	-1.5	-10	2

ROUND 8

TEST 1

EXAM 1.

Pairs of numbers or calculations which have the same value are:

1 - 20; 2 - 7; 3 - 9; 4 - 15; 5 - 12; 6 - 17; 8 - 19; 10 - 16; 11 - 13; 14 - 18.

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	C	B	A	D	C	B	C	B	A	C

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	B	B	A	C	D	B	C	A	D	A

TEST 2

EXAM 1.

Pairs of numbers or calculations which have the same value are:

1 - 7; 2 - 10; 3 - 12; 4 - 15; 5 - 20; 6 - 9; 8 - 19; 11 - 17; 13 - 18; 14 - 16

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	C	A	D	B	A	B	A	C	A	A

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	A	D	B	A	C	C	B	A	C	A

ROUND 9**EXAM 1.**

Question	1	2	3	4	5	6	7	8	9	10
Answer	11	25	5	12	123	2.25	1	1	3; -4; -1	0

EXAM 2.

Question	1	2	3	4	5	6	7	8	9	10
Answer	B	15	10	B	-1006	6	1	778	45	$\frac{1}{2015}$

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	C	2	1008	5	4	B	36	60	43	A

ROUND 10

EXAM 1.

Question	1	2	3	4	5	6	7	8	9	10
Answer	C	A	C	A	C	D	B	A	D	A

EXAM 2.

Pairs of numbers or calculations which have the same value are:

1 - 7; 2 - 10; 3 - 19; 4 - 12; 5 - 20; 6 - 9; 8 - 14; 11 - 17; 13 - 15; 16 - 18

EXAM 3.

Question	1	2	3	4	5	6	7	8	9	10
Answer	C	D	A	B	C	C	A	A	B	C

TABLE OF CONTENTS

Preface	3
Instructions	5
Part I. PRACTICAL TESTS	9
Round 1	9
Test 1	9
Test 2	14
Round 2	19
Test 1	19
Test 2	24
Round 3	29
Test 1	29
Test 2	33
Round 4	37
Test 1	37
Test 2	43
Round 5	48
Test 1	48
Test 2	53
Round 6	58
Test 1	58
Test 2	62
Round 7	66
Test 1	66
Test 2	71
Round 8	76
Test 1	76
Test 2	81
Round 9	86
Round 10	90
Part II. ANSWERS	95

Chịu trách nhiệm xuất bản:

Chủ tịch Hội đồng Thành viên MẠC VĂN THIÊN

Tổng Giám đốc GS.TS. VŨ VĂN HÙNG

Phó Tổng Giám đốc kiêm Tổng biên tập TS. PHAN XUÂN THÀNH

Tổ chức bản thảo và chịu trách nhiệm nội dung:

Phó Tổng biên tập NGUYỄN HIỀN TRANG

Giám đốc Công ty CP Sách dân tộc HÀ THỊ HẢI YẾN

Biên tập nội dung:

NGUYỄN THỊ THANH XUÂN

LÊ THỊ HUỆ

Sửa bản in:

NGUYỄN THỊ QUỲNH ANH

Biên tập mỹ thuật:

ĐẶNG HỒNG QUÂN

Trình bày bìa:

LƯƠNG QUỐC HIỆP

Thiết kế sách và chế bản:

HOÀNG MINH

Công ty cổ phần Sách dân tộc - Nhà xuất bản Giáo dục Việt Nam giữ quyền công bố tác phẩm

TỦ SÁCH VIOLYMPIC

TỰ LUYỆN VIOLYMPIC TOÁN BẰNG TIẾNG ANH - LỚP 7

Mã số : T7N01T6-CDT

Số ĐK xuất bản : 2106-2016/CXBIPH/23-874/GD

Số QĐXB: 4393/QĐ-GD-HN ngày 24 tháng 08 năm 2016

In 2.000 bản, (QĐ: 60), khổ : 17 x 24cm

Tại: Công ty TNHH Thiên ấn

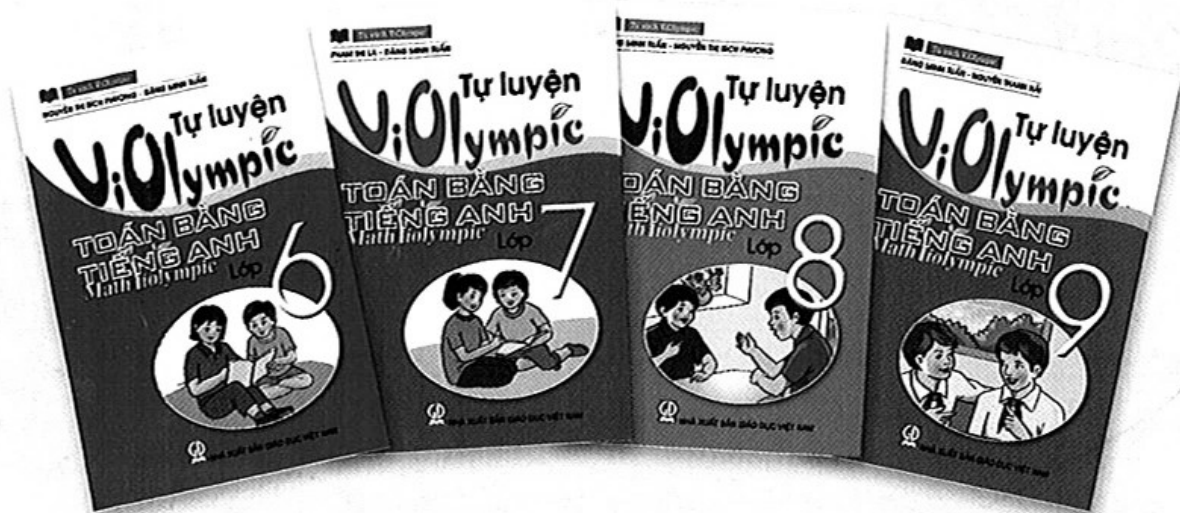
Địa chỉ : 211 Phố Chùa Láng - Đống Đa - Hà Nội

In xong và nộp lưu chiểu tháng 08 năm 2016.

Mã ISBN : 978-604-0-09237-3



TRẦN TRỌNG GIỚI THIỆU
Bộ sách TỰ LUYỆN VIOLYMPIC TOÁN
BẰNG TIẾNG ANH



Giáo viên và học sinh có thể mua tại:

- **Miền Bắc:** Công ty cổ phần Sách dân tộc
Địa chỉ: Tầng 2, 25 Hàn Thuyên, Hai Bà Trưng, Hà Nội
Điện thoại: 04.66637332 – 04.39725583; Fax: 04.38246923
- **Miền Trung:** Công ty cổ phần Sách giáo dục tại TP. Đà Nẵng
Địa chỉ: 78 Pasteur, Q. Hải Châu, TP. Đà Nẵng
- **Miền Nam:** Chi nhánh Công ty cổ phần Sách dân tộc tại TP. Hồ Chí Minh
Địa chỉ: 240, Đường Trần Bình Trọng, P.4, Q.5, TP. Hồ Chí Minh
ĐT/Fax: (08) 39381955
- và các công ty Sách – Thiết bị trường học trên cả nước.



Giá: 22.000 đồng

ISBN: 978-604-0-09237-3

