



# International FSP Contests

# 2024 QUESTION BOOKLET

# GRADE 9 & 10

## VIBRANT YOUNGSTERS

Time Allowed : 90 Minutes  
Maximum Marks : 90

EXHIBIT YOUR SKILLS TO THE WORLD

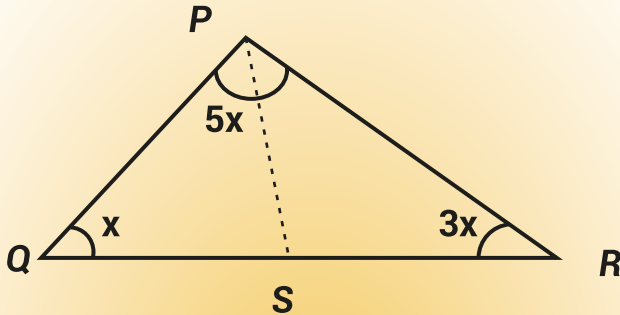
**FSP**  
**Mathematics**  
: Contest

## INSTRUCTIONS FROM THE EXAMINATION INVIGILATORS

- 1) Invigilators must be carried out promptly.
- 2) Don't start attempting the paper until instructed by the invigilator.
- 3) Carefully recheck your name, father name, school name, address etc. at the bubble sheet / answer sheet.
- 4) Record all answers on the bubble sheet only. select best answer from the four given options and mark only one option in each question.
- 5) Use blue / black ink to fill up the circles for your answers on the bubble sheet use of lead pencil is not allowed.
- 6) Use of any helping material including cell phones and electronic devices is strictly prohibited.
- 7) Every correct answer earns three points. there would be negative marking. one point would be deducted for every incorrect answer.
- 8) Candidates may not leave the examination room unescorted for any reason, and this includes using the washroom.
- 9) No materials or electronic devices shall be brought in to the room.
- 10) There are five categories of the contest as under:
  - A) Vibrant youngsters Grade 1 & 2
  - B) Vibrant youngsters Grade 3 & 4
  - C) Vibrant youngsters Grade 5 & 6
  - D) Vibrant youngsters Grade 7 & 8
  - E) Vibrant youngsters Grade 9 & 10 / 0-levels
- 11) Only registered students can participate in the contest.
- 12) No candidate shall take out of the hall any answer book(s) or part of an answer book, whether used or unused, or other supplied material.
- 13) If a participant does not understand a word or phrase on the exam paper, neither examiner nor invigilator is permitted to answer.
- 14) for information about upcoming contests or providing valuable feedback, please visit [www.fspcompetitions.org](http://www.fspcompetitions.org)
- 15) Any academic misconduct or malpractice must be reported to FSP vibrant youngsters at [info@fspcompetitions.org](mailto:info@fspcompetitions.org)

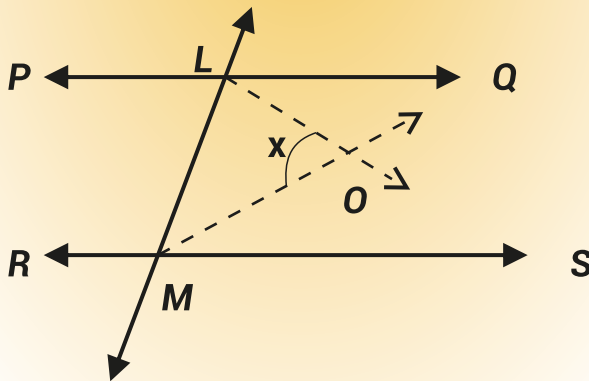
## Q-1

Find the angles  $\angle PSR$  and  $\angle PSQ$  if  $PS$  is angle bisector of  $\angle P$  and the angles of  $\triangle PQR$  are in the ratio 1 : 3 : 5.

A.  $90^\circ, 90^\circ$ B.  $110^\circ, 70^\circ$ C.  $30^\circ, 60^\circ$ D.  $120^\circ, 30^\circ$ 

## Q-2

Find  $x$  if  $PQ \parallel RS$  and  $MO$  and  $LO$  are angle bisectors.

A.  $60^\circ$ B.  $75^\circ$ C.  $90^\circ$ D.  $45^\circ$

See the table below and answer the questions 3 through 5.

Age of drivers (in years)	Number of accidents		
18 - 35	285	325	90
35 - 50	145	277	78
Above 50	123	118	59

**Q-3**

1500 drivers were selected for a study to find a relationship between age and accidents. What is the probability of being 18-35 years of age and having more than 1 accidents?

**A.** 0.06**B.** 0.6**C.** 0.08**D.** 0.1**Q-4**

1500 drivers were selected for a study to find a relationship between age and accidents. What is the probability of being elder than 35 years of age and having at least one accident?

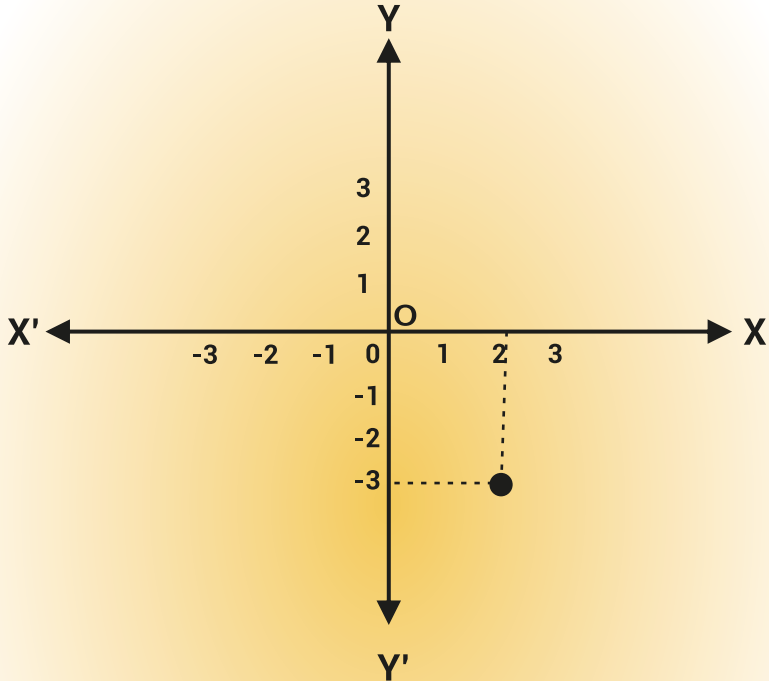
**A.** 0.41**B.** 0.25**C.** 0.354**D.** 0.333**Q-5**

1500 drivers were selected for a study to find a relationship between age and accidents. What is the probability of being 35-50 years of age and having more no accidents?

**A.** 0.29**B.** 0.35**C.** 0.09**D.** 0.08

## Q-6

From the given diagram, coordinates of point P are \_\_\_\_\_



A. (2, -3)

B. (-2, 3)

C. (2, 3)

D. (3, 2)

## Q-7

What is the coefficient of  $x^3$  in a polynomial  $6x^4 + 3x^2 + 8x + 5$ ?

A. 6

B. 3

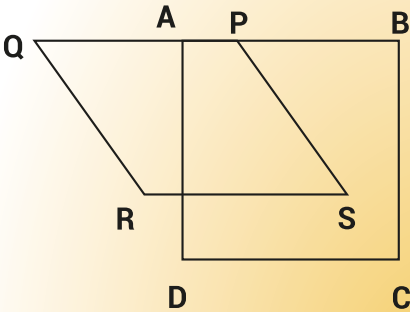
C. 8

D. 0

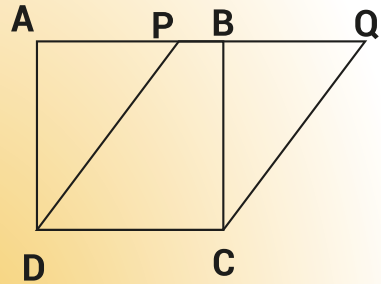
**Q-8**

Which of the following option represents two figures which are on the same base and same parallels?

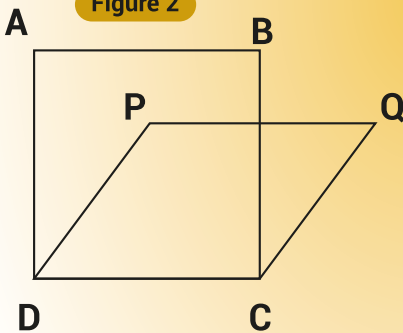
**Figure 3**



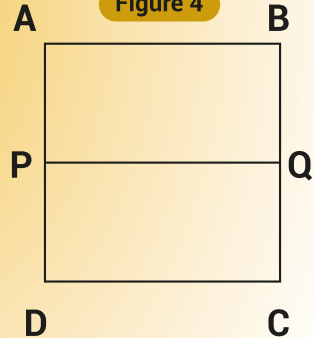
**Figure 1**



**Figure 2**



**Figure 4**



**A.** Figure 1

**B.** Figure 2

**C.** Figure 3

**D.** Figure 4

**Q-9**

There is a circular path around a sports field. Priya takes 18 minutes to drive one round of the field. Harish takes 12 minutes. Suppose they both start at the same point and at the same time and go in the same direction. After how many minutes will they meet?

**A.** 36 minutes**B.** 18 minutes**C.** 6 minutes**D.** They will not meet**Q-10**

From the table give below, how many students weigh more than 55kg?

Weight(kg)	Students
40-45	4
45-50	12
50-55	13
55-60	3
60-65	1
Total	25

**A.** 2**B.** 3**C.** 20**D.** 4

## Q-11

Express 98 as a product of its primes

**A.**  $2^2 \times 7$

**B.**  $2^2 \times 7^2$

**C.**  $2 \times 7^2$

**D.**  $23 \times 7$

## Q-12

The least number that is divisible by all the numbers from 1 to 5 (both inclusive) is -----

**A.** 5

**B.** 60

**C.** 20

**D.** 100

## Q-13

The coordinates of the ends of the diameter AB of a circle are A (-4, 7) and B(4, 7). What will be the coordinates of the center of the circle?

**A.** (0, -8)

**B.** (0, 8)

**C.** (0, 7)

**D.** (0, -7)

## Q-14

What will be the coordinates of B, if the point C (297,467), divides the line segment joining A (5, 8) and B (a, b) in the ratio 2:5?

**A.**  $a = 2, b = 3$

**B.**  $a = -2, b = 3$

**C.**  $a = 2, b = -3$

**D.**  $a = -2, b = -3$

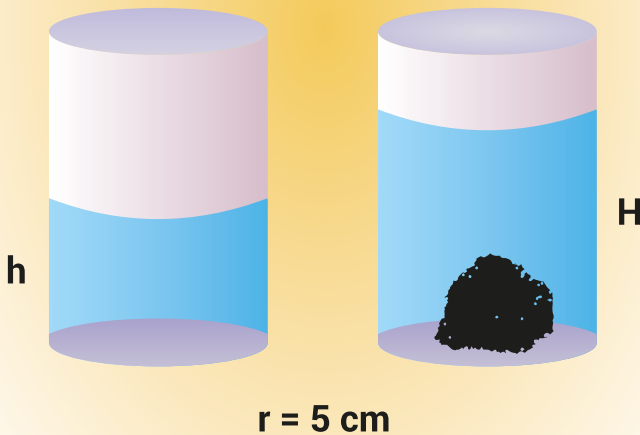


**Q-15**

If the product of the first four consecutive terms of a G.P is 256 and if they common ratio is 4 and the first term is positive, then its 3<sup>rd</sup> term is \_\_\_\_\_

**A.** 16**B.** 1/16**C.** 1/32**D.** 8**Q-16**

The height  $h$  of water in a cylindrical container with radius  $r = 5$  cm is equal to 10 cm. Peter needs to measure the volume of a stone with a complicated shape and so he puts the stone inside the container with water. The height of the water inside the container rises to 13.2 cm. What is the volume of the stone in cubic cm?

**A.** 85? cubic centimeters**B.** 75? cubic centimeters**C.** 80? cubic centimeters**D.** 45? cubic centimeters

## Q-17

Pump A can fill a tank of water in 4 hours. Pump B can fill the same tank in 6 hours. Both pumps are started at 8:00 a.m. to fill the same empty tank. An hour later, pump B breaks down and took one hour to repair and was restarted again. When will the tank be full? (round your answer to the nearest minute).

**A.** 11:20 a.m.

**B.** 09:55 a.m.

**C.** 10:48 a.m.

**D.** 10:45 a.m.

## Q- 18

At 11:00 a.m., Aamir started driving along a highway at constant speed of 50 miles per hour. A quarter of an hour later, Ayaan started driving along the same highway in the same direction as Aamir at the constant speed of 65 miles per hour. At what time will Ayaan catch up with Aamir?

**A.** 11:55 a.m.

**B.** 2:30 p.m.

**C.** 11:20 p.m.

**D.** 12:05 p.m.

## Q-19

Abdullah travels 60 miles per hour going to a neighboring city and 50 miles per hour coming back using the same road. He drove a total of 5 hours away and back. What is the distance from Abdullah's house to the city he visited? (round your answer to the nearest mile).

**A.** 136 miles

**B.** 120 miles

**C.** 145 miles

**D.** 140 miles

**Q-20**

A teacher says:

"I am thinking of two natural numbers bigger than 1. Try to guess what they are."

The first student knows their product and the other one knows their sum.

First: "I do not know the sum."

Second: "I knew that. The sum is less than 14."

First: "I knew that. However, now I already know the numbers."

Second: "And so do I."

**What were the numbers?**

**A.** 3 and 6

**B.** 4 and 8

**C.** 2 and 4

**D.** 2 and 9

**Q-21**

Age problems were quite the fashion in antiquity. Here is an example:

I have twice the age you had when I had the age you have.

When you'll have the age I have, together we will have 63 years.

**How old are we (individually)?**

**A.** we are 24 and 17

**B.** we are 30 and 18

**C.** we are 37 and 26

**D.** we are 28 and 21

## Q-22

## Welcome to the strange mind of Eureka Blip.

He does not always think the same way as we do, but he does always have his own logical set of rules. One of his favourite tricks is to say the opposite of what he really means. Recently I had a conversation with him, which went like this:

"Good morning, Eureka, how are you?"

"Go away. I feel absolutely dreadful."

"What are you thinking about today?"

"I am not thinking of any number at all."

"Is your number less than 50?"

"No. It is greater than 50, and it is a prime number."

"Is it less than 26?"

"Yes, and it is an even number."

"And it's not a square number?"

"Correct."

"Thank you, Eureka. Goodbye."

"Please. Hello."

**What was Eureka Blip thinking of?**

**A.** 55

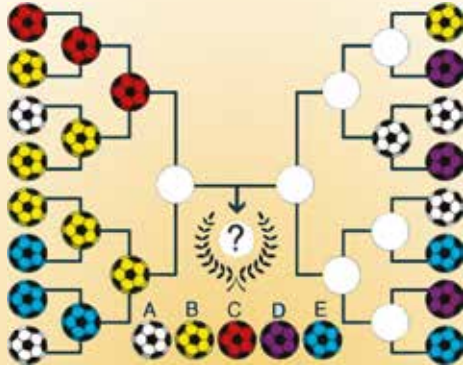
**B.** 49

**C.** 75

**D.** 27

**Q-23**

Which team (A-E) will win the competition if the logic of this diagram is continued?



- A.** A
- B.** B
- C.** C
- D.** D

**Q-24**

A point is scored when the ball lands on an orange square. Give the coordinates of the last square that should be orange.



- A.** 7D
- B.** 6F
- C.** 4G
- D.** 1A

**Q-25**

Which cream percentage should replace the question mark?



- A.** 50
- B.** 45
- C.** 54
- D.** 61

**Q-26**

Which marble (1-6) should replace the question mark?



- A.** 1
- B.** 3
- C.** 6
- D.** 5

**Q-27**

Within a school, the total number of students who have school lunches to packed lunches is 5:7. If 465 students have a school lunch, how many students have a packed lunch?

**A.** 800**B.** 545**C.** 651**D.** 750**Q-28**

The 8th term of the sequence 1,1,2,3,5,8,.....is

**A.** 21**B.** 25**C.** 24**D.** 23**Read the information and answer the questions 29 and 30.**

The Smith family is going to take a vacation to Florida. They live in Illinois, and have figured out that the trip is 1,150 miles from their house to the hotel in Florida. They get 28 miles per gallon of gas, and plan on travelling at an average rate of 60 miles per hour. Gas costs about \$2.89 per gallon.

**Q-29**

How long will it take them to get to Florida? (in hours)

**A.** 17.5 hours**B.** 13.6 hours**C.** 14.3 hours**D.** 19.2 hours**Q-30**

How much money should they leave for gasoline (going one way)?

**A.** \$128.37**B.** \$118.49**C.** \$318.35**D.** \$428.23

# ANSWER SHEET

## GRADE 9 & 10



Q.NO ANSWER

1	<input type="radio"/> A	<input checked="" type="radio"/>	<input type="radio"/> C	<input type="radio"/> D
2	<input type="radio"/> A	<input type="radio"/> B	<input checked="" type="radio"/>	<input type="radio"/> D
3	<input checked="" type="radio"/>	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
4	<input type="radio"/> A	<input type="radio"/> B	<input checked="" type="radio"/>	<input type="radio"/> D
5	<input checked="" type="radio"/>	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
6	<input checked="" type="radio"/>	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
7	<input type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input checked="" type="radio"/>
8	<input checked="" type="radio"/>	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
9	<input checked="" type="radio"/>	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
10	<input type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input checked="" type="radio"/>
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12	<input type="radio"/> A	<input checked="" type="radio"/>	<input type="radio"/> C	<input type="radio"/> D
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14	<input checked="" type="radio"/>	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
15	<input checked="" type="radio"/>	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D

Q.NO

ANSWER

16	<input type="radio"/> A	<input type="radio"/> B	<input checked="" type="radio"/>	<input type="radio"/> D
17	<input type="radio"/> A	<input type="radio"/> B	<input checked="" type="radio"/>	<input type="radio"/> D
18	<input type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input checked="" type="radio"/>
19	<input type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input checked="" type="radio"/>
20	<input type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input checked="" type="radio"/>
21	<input type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input checked="" type="radio"/>
22	<input type="radio"/> A	<input checked="" type="radio"/>	<input type="radio"/> C	<input type="radio"/> D
23	<input type="radio"/> A	<input type="radio"/> B	<input checked="" type="radio"/>	<input type="radio"/> D
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28	<input checked="" type="radio"/>	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
29	<input type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input checked="" type="radio"/>
30	<input type="radio"/> A	<input checked="" type="radio"/>	<input type="radio"/> C	<input type="radio"/> D



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