



TeenEagle

MATHS

Category - 5
Grade 9-10

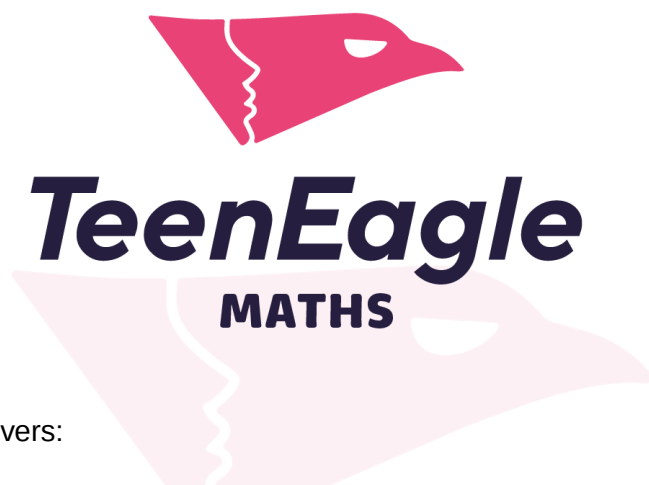
PRACTICE QUESTIONS

TMC

Category - 5

Grade 9 - 10

Sample Questions



Topics this category covers:

Topics		
1	Logical Thinking	Construction problems Speed-distance-time problems Advanced number and figure problems Logical age and date problems
2	Numbers	Fractions and Percentages Power, roots and standard form Growth and decay Time, currency and conversions
3	Algebra and Sequences	Algebraic roots and indices Expanding and factorizing brackets Linear equations quadratic equations Functions Simultaneous equations
4	Coordinate Geometry and Graphs	Coordinate geometry Linear and quadratic graphs Solving and graphing inequalities Parallel lines and scale drawings
5	Pythagoras & Trigonometry	Right angled triangles Sine and Cosine rules Area of triangle Basic Trigonometric graphs and equations
6	Probability and Statistics	Basic and Conditional probability Statistical diagrams Histogram Cumulative frequency

1. (Logical Thinking)

3 points

In Step 1, each letter is represented by a distinct figure on the equivalence side. Based on this pattern, which figures should replace the question marks?

H O S H I M      
S O H O M I S H ?

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

2. (Logical Thinking)

3 points

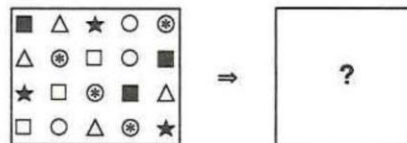
If the word BRIGHTEDUCATION is converted into its alphabetical order (A = 1, B = 2, C = 3, ..., Z = 26), which sequence of numbers is correct?

- (A) 2, 18, 9, 7, 8, 20, 5, 4, 21, 3, 1, 20, 10, 15, 14
(B) 2, 18, 9, 7, 8, 20, 5, 4, 21, 8, 1, 20, 9, 15, 15
(C) 2, 18, 9, 7, 8, 5, 20, 4, 21, 3, 1, 20, 9, 15, 14
(D) 2, 18, 9, 7, 8, 20, 5, 4, 21, 3, 1, 20, 9, 15, 14

3. (Logical Thinking)

3 points

Each figure is assigned a unique number on the equivalence side. According to the observed pattern, which numbered box should correctly replace the question marks?



- (A)

4	3	7	1	9
3	9	5	1	4
7	5	4	9	3
5	1	3	9	7

- (B)

4	3	7	1	9
3	9	5	1	4
7	5	9	4	3
5	1	3	9	7

- (C)

4	3	7	1	9
3	9	5	1	4
7	5	9	4	3
1	3	5	9	7

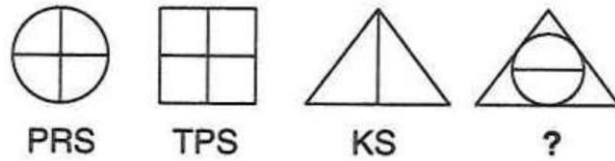
- (D)

4	3	7	1	9
3	9	4	1	5
7	5	9	4	3
5	1	3	9	7

4. (Logical Thinking)

3 points

Using the given figure and its corresponding letters, determine which letters should be assigned to the last figure.

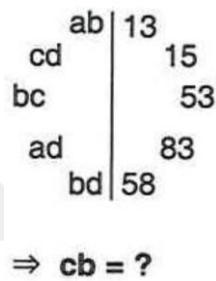


- (A) KPR (B) SRP (C) KSP (D) PK

5. (Logical Thinking)

3 points

Using the given figure with letters and its corresponding numbers, determine which numbers should be assigned.

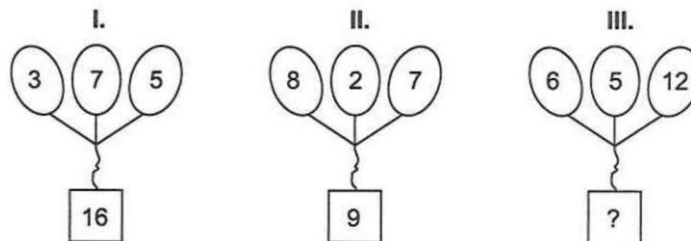


- (A) 81 (B) 18 (C) 85 (D) 51

6. (Logical Thinking)

3 points

In each diagram three balloons are connected to a box. The number in the box is produced by the same rule in all diagrams.



Which number should replace the question mark?

- (A) 16 (B) 17 (C) 18 (D) 19

7. (Logical Thinking)

3 points

On an island, each person is either a knight (always tells the truth) or a knave (always lies). Three inhabitants — P, Q, R — make these statements:

- **P: “Q is a knave.”**
- **Q: “R is a knave.”**
- **R: “P and Q are of the same type.”**

Which of these is true?

- (A) Only P is a knight.
- (B) Only Q is a knight.
- (C) Only R is a knight.
- (D) All three are knaves.

8. (Logical Thinking)

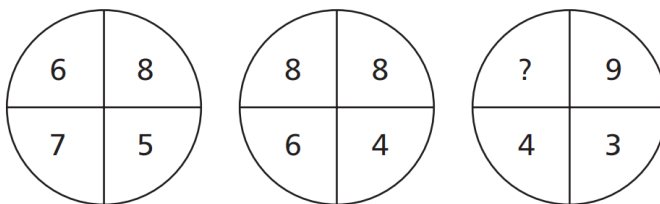
3 points

A farmer must carry a wolf, a goat, and a cabbage across a river. The boat holds the farmer plus one item at a time. If left alone together without the farmer, the wolf will eat the goat, and the goat will eat the cabbage. What is the minimum number of river crossings (each trip of the farmer across the river counts as one crossing) needed to get everyone safely to the other side?

- (A) 5
- (B) 6
- (C) 7
- (D) 8

9. What number should replace the question mark?

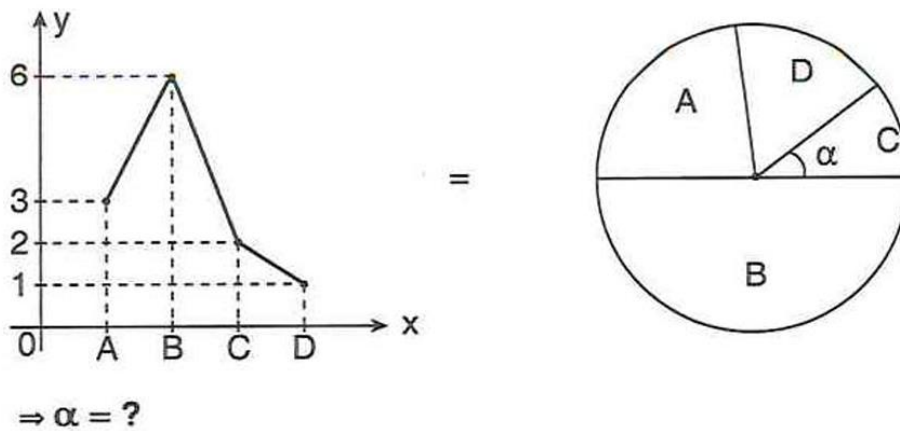
3 points



- (A) 10
- (B) 8
- (C) 9
- (D) 12

10.

3 points



If the data from the graph is transferred to the pie-chart, what will be the angle α ?

- (A) 75 (B) 60 (C) 45 (D) 30

11. (1 - Numbers: Fractions and Percentages)

4 points

Susan spent her \$560 for presents.
 She spent $\frac{1}{7}$ of her money to buy presents to her parents
 She spent $\frac{2}{5}$ of the remaining money to buy presents to her friends
 She spent the rest of her money to buy presents for her sisters.

Calculate the percentage of the total money that she spent on presents for her sisters.

- (A) 14.3% (B) 34.3% (C) 48.6% (D) 51.4%

12. (1 - Numbers: Fractions and Percentages)

4 points

The table shows the surface area of some countries and their estimated population in 2023.

Country	Surface Area (km ²)	Estimated population (million)
China	9 596 960	1422
Russia	17 098 242	144
Italy	301 340	59
Cambodia	181 035	16

What is the population of Cambodia as a percentage of the population of Russia?

- (A) 11.1% (B) 9% (C) 90% (D) 27.1%

13. (1 - Numbers: Power, roots and standard form)

4 points

Calculate $(3 \times 10^{-3})^3$

Answer is in the standard form

- (A) 27×10^{-8} (B) 2.7×10^{-8} (C) 27×10^{-9} (D) 270×10^{-9}

14. (2 - Algebra and Sequences: Algebraic roots and indices)

4 points

Simplify the equation below

$$\left(\frac{x^3}{8}\right)^{-\frac{4}{3}}$$

- (A) $16x^{-4}$ (B) $16x^4$ (C) $8x^{-4}$ (D) $8x^4$

15. (3 - Coordinate Geometry and Graphs: Coordinate geometry)

4 points

A line joins $A(2,3)$ to $B(-3, 19)$

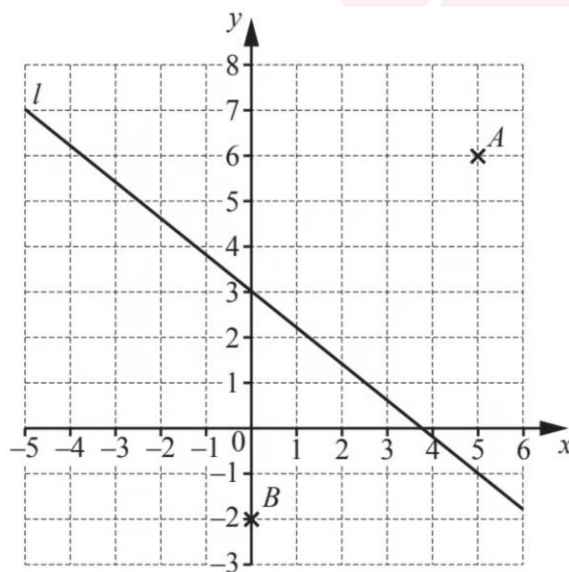
What is the midpoint of AB ?

- (A) $\{2.5, 11\}$
- (B) $\{2.5, 8\}$
- (C) $\{-0.5, 11\}$
- (D) $\{-1, 22\}$

16. (3 - Coordinate Geometry and Graphs: Coordinate geometry)

4 points

Find the gradient of the line represented in the graph below:

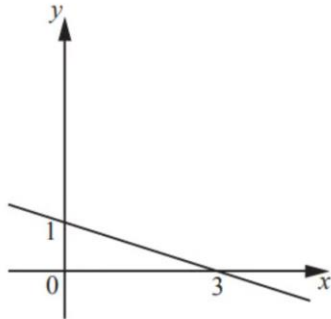


- (A) -5 (B) 2.3 (C) 1.25 (D) -0.75

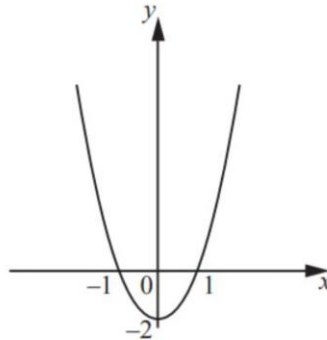
17. (3 - Coordinate Geometry and Graphs: Graphs)

4 points

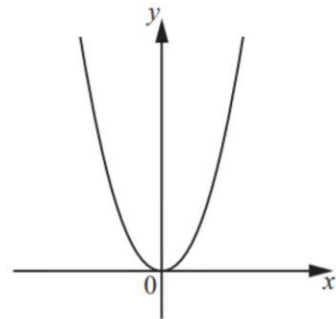
The diagram below represents six different functions



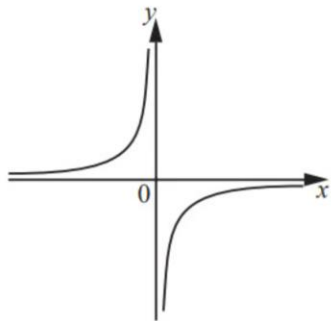
A



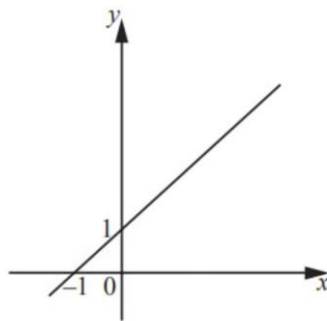
B



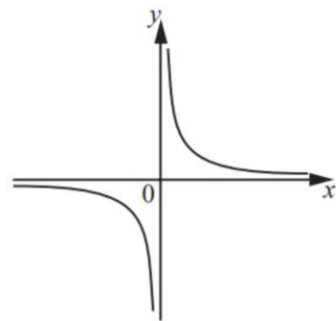
C



D



E



F

Which option states only a graph of quadratic functions?

- (A) A and B
- (B) B and C
- (C) D and F
- (D) Only E

18. (4 - Pythagoras & Trigonometry: Right angled triangles)

4 points

A student drew a triangle XYZ with a perimeter of 20 m . The length of XY is 7 m and YZ is 4 m . She says it is a right triangle.

Deduct if her statement is correct?

- (A) She is correct
- (B) She is wrong
- (C) She is partially correct
- (D) It cannot be determined from the data given

19. (5 - Probability and Statistics: Basic probability)

4 points

A bag contains blue, red, yellow and green marbles only.
A marble is taken from the bag at random.
The table shows some information about the probabilities.

Colour	Blue	Red	Yellow	Green
Probability	0.15	0.2		0.43

Complete the table

- (A) 0.78 (B) 0.58 (C) 0.22 (D) 0.15

20. (5 - Probability and Statistics: Conditional probability)

4 points

The diagram shows five cards.



Masha takes two cards at random, without replacement.
Find the probability that both cards show an even number.

- (A) 0.1 (B) 0.15 (C) 0.25 (D) 0.33

21. (1 - Numbers: Fractions and Percentages)

5 points

Work out $\frac{5}{7} \div 5\frac{1}{2}$

(Give your answer in the simplest form of the fraction)

- (A) $\frac{10}{77}$ (B) $\frac{2}{5}$ (C) $\frac{5}{2}$ (D) $\frac{55}{14}$

22. (1 - Numbers: Fractions and Percentages)

5 points

The new selling price of a shirt is \$24.5.
This price is a 30% sale applied price.



What is the original price of the shirt?

- (A) \$31.85 (B) \$35 (C) 40\$ (D) 41.65\$

23. (1 - Numbers: Power, roots and standard form)

5 points

Calculate the below equation:

$$Q = \sqrt{\frac{w}{d^2}}$$

$$w = 5.6 \times 10^{-5}$$

$$d = 1.4 \times 10^{-4}$$

Calculate the value of Q and give your answer in the standard form correct to 3 significant figures.

- (A) 5.345×10 (B) 5.35×10 (C) 53.4×10^{-2} (D) 534.522×10^{-2}

24. (2 - Algebra and Sequences: Quadratic equations)

5 points

The n th term of a sequence is $4n^2 + n + 3$.

Find the value of n when the n th term is 498.

- (A) 11 (B) 12 (C) 6 (D) 8

25. (3 - Coordinate Geometry and Graphs: Graphs)

5 points

The table below shows some values of a function.

x	-1	-0.5	0	0.5	1	1.5	2
y	-3	1.75	a	b	c	0.75	3

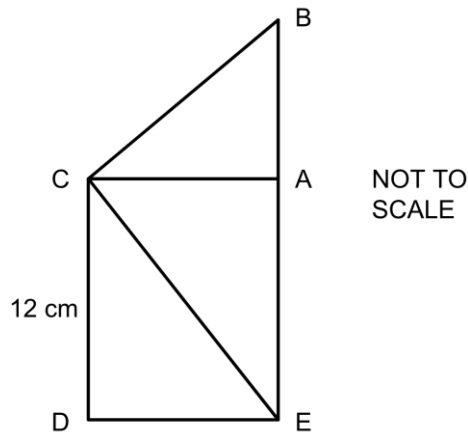
If the function is $y = 2x^3 - 5x^2 + 21$, then complete the table.

- (A) $a = 21, b = 20, c = -24$
(B) $a = 21, b = 28, c = 18$
(C) $a = 21, b = 28, c = 18$
(D) $a = 21, b = 20, c = 18$

26. (4 - Pythagoras & Trigonometry: Basic Trigonometric graphs and equations)

5 points

$ACDE$ is a rectangle.
 ACE and ACB are a right triangle.
 EAB is a straight line.



The length of the CD is 12 cm.
Angle CED is 60° .
Angle BCE is 90° .

What is the area of triangle ECB ?

- (A) $36\sqrt{3}$ cm² (B) 32 cm² (C) 64 cm² (D) $32\sqrt{3}$ cm²

27. (5 - Probability and Statistics: Basic statistics)

5 points

Gosha sat on 8 examinations.
Here are his marks for 5 of the examinations.

68 72 75 77 80

For his results in all 8 examinations
the mode of his marks is 80
the median of his marks is 74
the range of his marks is 16

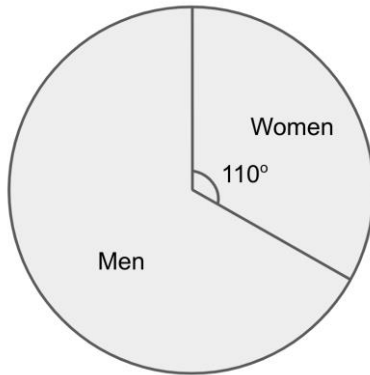
Find Gosha's marks for each of the other 3 examinations.

- (A) 64, 73, 80 (B) 67, 75, 80 (C) 71, 75, 79 (D) 71, 73, 81

28. (5 - Probability and Statistics: Statistical diagrams)

5 points

The diagram below is the pie chart which gives information about the election results of women and men.



3360 more men voted than women.

How many women voted and what percentage of voters are men?

- (A) 3140 women voted and the percentage of men is 58.6 %
- (B) 2460 women voted and the percentage of men is 63.8 %
- (C) 6000 women voted and the percentage of men is 30.56 %
- (D) 2640 women voted and the percentage of men is 69.4 %

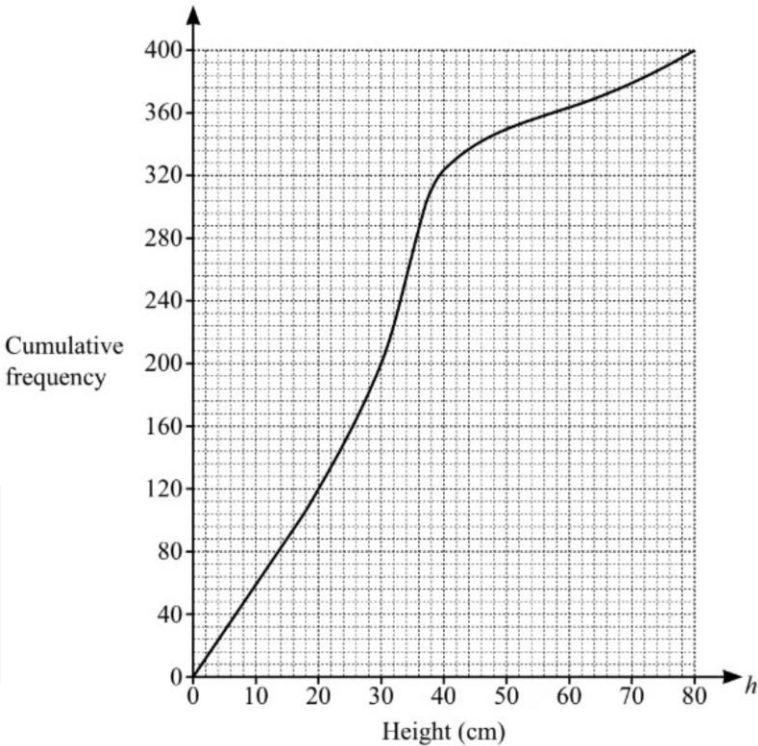
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29. (5 - Probability and Statistics: Cumulative frequency)

5 points

The student measures the height, h in cm, of each of 400 plants. The diagram below is the cumulative frequency diagram for the students' records.

Use the diagram to calculate the interquartile range in cm.



- (A) 30 cm (B) 20 cm
(C) 37 cm (D) 17 cm

30. (5 - Probability and Statistics: Cumulative frequency)

5 points

The diagram below shows the speed of 65 trucks

Speed (s) in km/h	Frequency
$0 < s \leq 20$	2
$20 < s \leq 40$	9
$40 < s \leq 60$	23
$60 < s \leq 80$	31

Complete the cumulative frequency table below with the information given in the above table.

Speed (s) in km/h	Cumulative frequency
$0 < s \leq 20$	2
$0 < s \leq 40$	
$0 < s \leq 60$	
$0 < s \leq 80$	

- (A) 11, 34, 65 (B) 11, 32, 54 (C) 7, 14, 8 (D) 49, 83, 111

Answer key (Exam Questions)

1. A
2. D
3. B
4. A
5. C
6. C
7. B
8. C
9. A
10. D
11. D
12. A
13. B
14. A
15. C
16. D
17. B
18. B
19. C
20. A
21. A
22. B
23. B
24. A
25. D
26. D
27. A
28. D
29. B
30. A



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