

TMC - 3



TeenEagle
MATHS

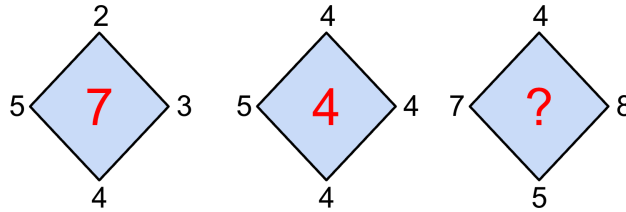
TeenEagle
MATHS

Qualification Round Questions

1. (Logical Thinking)

3
points

Look at the pattern of numbers in the picture.



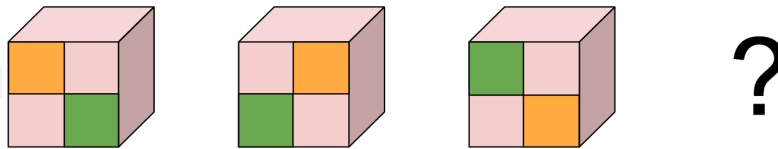
What is the missing number?

- (A) 3 (B) 6 (C) 11 (D) 36

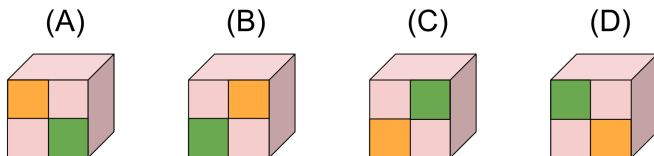
2. (Logical Thinking)

3
points

Look at the pattern of shapes in the figure below.



What is the missing shape?



3. (Logical Thinking)

3
points

Look at the pattern of numbers in the picture.

5	8	8	12	9	14	a	16
15	3	32	4	45	5	b	9

What is the value of $b - a$?

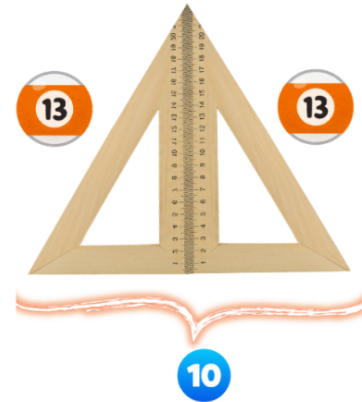
- (A) 25 (B) 42 (C) 56 (D) 63

4. (Geometry)

3
points

An isosceles triangle has a base of 10 cm and two equal sides of 13 cm.
What is its height?

- (A) 23 cm
- (B) 13 cm
- (C) 12 cm
- (D) 8 cm



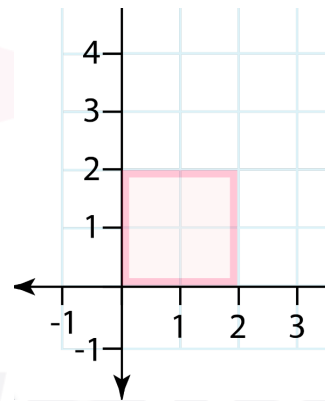
5. (Geometry)

3
points

A square is drawn with vertices at (0,0), (2,0), (2,2), and (0,2).
It is rotated 180° about the origin.

What are the new coordinates of the vertex that was at (2,2) originally?

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



6. (Geometry)

3
points

The sum of the interior angles of a polygon is 1080°.
How many sides does the polygon have?

- (A) 9
- (B) 8
- (C) 7
- (D) 6

7. (Probability)

3
points

A bag contains 5 red, 3 green, and 2 blue marbles.
If Ahmet draws one marble at random, what is the probability that it is not green?

- (A) $\frac{7}{10}$
- (B) $\frac{5}{10}$
- (C) $\frac{3}{10}$
- (D) $\frac{2}{10}$



8. (Algebra: Functions)

3
points

The function h is given below:

$$h(x) = x^2 - 4$$

What is the value of $h(5) - h(3)$?

- (A) 5 (B) 16 (C) 18 (D) 21

9. (Numbers)

3
points

Evaluate the expression below in its simplest form.

$$\frac{3^5}{3^2}$$

- (A) $3^1 = 3$ (B) $3^2 = 9$ (C) $3^3 = 27$ (D) $3^7 = 2187$

10. (Algebra)

3
points

Given the two linear equations below:

$$4y - 2x = 8 \text{ and } 2y - 9x = 12$$

Determine the point of intersection of the two lines.

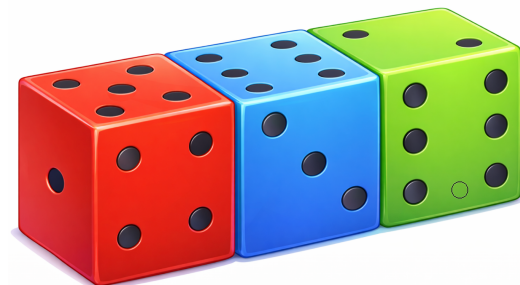
- (A) $(-1, 1.5)$ (B) $(1, 1.5)$ (C) $(-1, -1.5)$ (D) $(-1.5, -1)$

11. (Logical Thinking)

4
points

What is the sum of the values on the 11 hidden faces of the three dice shown? (Hint: The total number of dots on a single die is 21.)

- (A) 36 (B) 28 (C) 21 (D) 19



12. (Logical Thinking)

4
points

The sum of the 3 symbols in this column is 10

The sum of the 3 symbols in diagonal is 9

The sum of the 3 symbols this row is 16

12	10	13	9
			16
			13
			6
5	2	6	

Answers

- = 5
- = 2
- = 6

13	16	25	13
			11
			18
			25
13	2	25	

Answers

- = ____
- = ____
- = ____

Find the value of each symbol.

- (A) sun = 3, lightning = 5, cloud = 10
- (B) sun = 5, lightning = 3, cloud = 10
- (C) sun = 3, lightning = 5, cloud = 8
- (D) sun = 2, lightning = 7, cloud = 10

13. (Logical Thinking)

4
points

Two letter grids are provided below.

The first grid includes a word with its corresponding letter coordinates, while the other contains only a word.

The rule for constructing a word is to use the numbers from the horizontal and vertical axes of the letter grid, treating them as coordinates.

	1	2	3	4
1	A	C	V	T
2	R	D	L	B
3	E	F	I	H
4	K	N	G	M

RANGE = 1211243413

	1	2	3	4
1	H	B	V	H
2	O	D	L	C
3	E	F	J	A
4	K	N	G	M

HACKLE = ?

What are the coordinates for HACKLE?

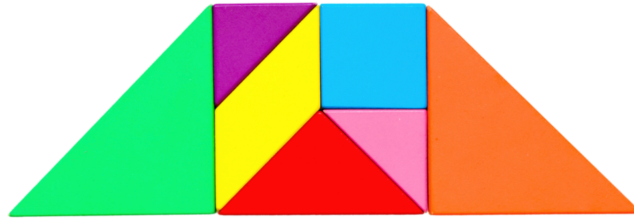
- (A) 414342143213
- (B) 143424412331
- (C) 431121143213
- (D) 414341243213

14. (Geometry)

4
points

Zainab made a trapezoid shape from wooden figures in the TeenEagle Kid's Playground.

A trapezoid has parallel sides of length 8 cm and 12 cm, and a height of 5 cm.



What is the area of the constructed shape?

- (A) 25 cm² (B) 50 cm² (C) 100 cm² (D) 480 cm²

15. (Probability)

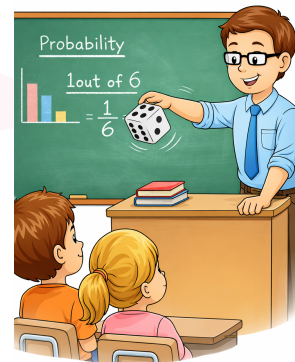
4
points

A maths teacher at a TeenEagle school rolled a six-sided die 400 times.

A 'four' appears 80 times.

What is the relative frequency of rolling a 'four'?

- (A) 0.125 (B) 0.20 (C) 0.25 (D) 0.80



16. (Geometry)

4
points

A circle is inscribed in a square with a side length of 10 cm.

What is the area of the region inside the square but outside the circle?

(Use $\pi = 3.14$)

- (A) 15.7 cm² (B) 21.5 cm² (C) 25 cm² (D) 78.5 cm²

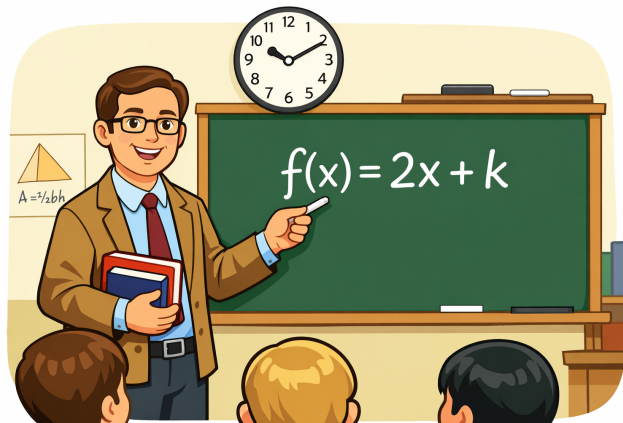
17. (Functions)

4
points

A mathematics teacher has written a function on the board, missing a constant number.

If $f(3) = 11$, find the value of $f(7)$.

- (A) 5 (B) 8 (C) 17 (D) 19



18. (Algebraic Expressions)

4
points

Find the correct value of x for the algebraic expression below:

$$3(2x - 5) - 4(x + 1) = 2(x - 9)$$

- (A) $x = -19$ (B) $x = 2$ (C) $x = 18$ (D) No solution

19. (Expressions)

4
points

A TeenEagle taxi company charges a fixed booking fee of £5 and £2 per kilometer traveled. The total cost C (in GBP) for traveling x kilometres is given by a function.

Which function represents this situation?

- (A) $C(x) = 2x + 5$
(B) $C(x) = 5x + 2$
(C) $C(x) = 2(x + 5)$
(D) $C(x) = x + 10$

20. (Exponential equations)

4
points

Find the value of x in the exponential equation below:

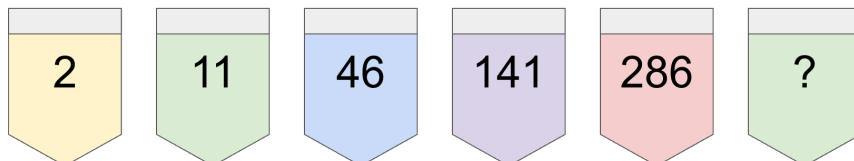
$$2^{x+1} = 64$$

- (A) $x = 4$ (B) $x = 5$ (C) $x = 6$ (D) $x = 7$

21. Logical Thinking)

5
points

Look at the pattern of numbers in the picture.



What is the missing number at the end of the pattern?

- (A) 291 (B) 292 (C) 293 (D) 294

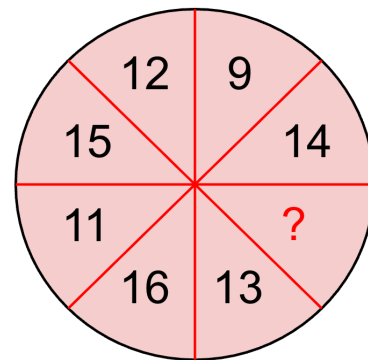
22. (Logical Thinking)

5
points

Look carefully at the wheel to the right.

Determine the missing number.

- (A) 10
- (B) 12
- (C) 15
- (D) 16



23. (Algebra)

5
points

Function $f(a, b)$ is given below. The inputs of function are a and b .

$$f(a, b) = \sqrt{\sqrt{a} - \sqrt{b}}$$

Find the value of the function f if $a = 16$ and $b = 4$?

- (A) $\sqrt{2}$
- (B) $\sqrt{2} + 1$
- (C) $\sqrt{3}$
- (D) $\sqrt{3} + 2$

24. (Algebraic Expressions)

5
points

Solve the equation below for the value of x :

$$2(3x - 4) - (5 - 2(x + 1)) = 3(x - 7)$$

- (A) $x = 1$
- (B) $x = -2$
- (C) $x = -5$
- (D) $x = -9$

25. (Numbers)

5
points

Evaluate the expression below in its simplest form.

$$\left(\frac{2^6 \cdot 2^3}{2^5} \right)$$

- (A) $2^2 = 4$
- (B) $2^3 = 8$
- (C) $2^4 = 16$
- (D) $2^{14} = 16384$

26. (Functions)

5
points

A function $f(x) = 3x + 4$ represents the total number of points a TeenEagle team earns in a basketball game after x rounds.

Another team, the Bright team, has a score given by $g(x) = 5x - 6$.

After how many rounds will both teams have the same score?

- (A) 2 rounds (B) 3 rounds (C) 5 rounds (D) 7 rounds

27. (Exponents)

5
points

If $2^a = 5$, find the value of 2^{a+3} .

- (A) 15 (B) 20 (C) 35 (D) 40

28. (Percentages)

5
points

A mathematics teacher at a TeenEagle school chose a number. He increased it by 10%, then by another 10%.

If the final value is 121, what was the original number?

- (A) 90 (B) 100 (C) 110 (D) 111

29. (Ratio and Proportions)

5
points

A container holds milk and water in the ratio 5 : 3.

The total volume is 32 litres.

Then 8 litres of the mixture are removed and replaced with 8 litres of milk.

What is the new ratio of milk to water?

- (A) 23 : 9 (B) 15 : 9 (C) 20 : 13 (D) 28 : 9



30. (Algebra: Functions)

5
points

A function follows the pattern below:

Input value, x	3	4	5	7
Output value, $f(x)$	8	15	24	48

- (A) $f(x) = 10x + 2$
 (B) $f(x) = 3x - 1$
 (C) $f(x) = x^2 - 1$
 (D) $f(x) = 2x^2 - 5$

Answer Key

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