



11+ ENTRANCE EXAM

SAMPLE MATHS PAPER

Time allowed: 1 hour

Calculators are *not* allowed.

Write your candidate number in the box above.

There are **two parts** to this paper.

The first section is made up of multiple choice questions. For each question use pencil to put a circle around the correct answer. If you make a mistake, rub it out and circle the correct answer. You should spend no more than 25 minutes on this section.

As soon as you have finished this section, or after 25 minutes, you should move on to the second section.

The second section contains questions where you may need to show your methods and your working out. The last question is a puzzle-type question. If you finish this section you may go back to the earlier section if you need to.

Do not write in this area.

Results:

Section A	/ 25
Section B	/ 50



Section A

You may use rough paper for working out but this will not be marked. Only the answers you circle will be marked.

For each question, circle the correct answer in pencil.

1.

Which of these numbers is **not** a prime number?

A 2

B 5

C 7

D 9

A prime number is only divisible by 1 and itself.
Since 9 can be divided by 3, this is the only non-prime number
with 1, 3 and 9 being its factors

2.

In the number 2.369 what does the 6 mean?

A 6

B $\frac{6}{1000}$

C $\frac{6}{10}$

D $\frac{6}{100}$

The value of 6 in 2.369 is 0.06, which is equivalent to 6 hundredths

3.

What is 25% of £84?

A £59

B £21

C £109

D £42

$$\begin{array}{r} 25 \\ \times 84 \\ \hline 100 \\ 2000 \\ \hline 2100 \end{array}$$

$$\frac{25}{100} \times 84 = \frac{2100}{100} = 21$$

$25\% = \frac{1}{4}$, so you can also solve
the question by dividing 84 by 4!

4.

What is the sum of the first four odd numbers?

A 4

B 10

C 16

D 20

$$1 + 3 + 5 + 7 = 16$$

Odd numbers are numbers that are not divisible by 2

5.

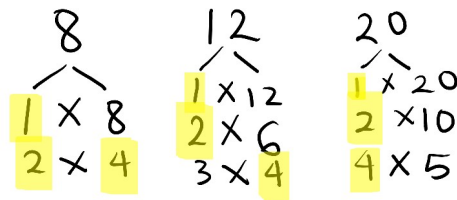
How many factors do 8, 12 and 20 have in common?

A 1

B 2

C 3

D 4



1, 2 and 4 are the only **three** factors that 8, 12 and 20 have in common

6.

If $a = 5$ what is $2a$?

A 10

B 52

C 7

D 25

$$\begin{array}{l} \times 2 \quad a = 5 \\ \downarrow \quad \quad \quad \downarrow \times 2 \\ 2a \quad \quad \quad 10 \end{array}$$

By multiplying both sides of the equal sign by 2 we can get the value of $2a$, where 2 is the coefficient and 'a' is the variable

7.

If $x + 12 = 17$, what is x ?

A 29

B 5

C 17

D none of these

$$\begin{array}{l} x + 12 = 17 \\ -12 \quad \quad \quad -12 \\ \swarrow \quad \quad \quad \searrow \\ x = 5 \end{array}$$

By subtracting both sides of the equal sign by 12 we can get the value of x

8.

When $t = 4$, which answer is the odd one out?

- A $2t$
 2×4
 $= 8$
- B $t + 2$
 $4 + 2$
 $= 6$
- C $32 \div t$
 $32 \div 4$
 $= 8$
- D $t + 4$
 $4 + 4$
 $= 8$

9.

I think of a number, double it and add 3. My answer is 15. What was my number?

- A 6
- B 12
- C 33
- D 18
- Let's assume the number is x
- $$2x + 3 = 15$$
- $$\begin{array}{l} -3 \quad \swarrow \quad \searrow \\ 2x = 12 \end{array}$$
- $$\begin{array}{l} \div 2 \quad \swarrow \quad \searrow \\ x = 6 \end{array}$$

10.

What is another way of writing $a + a + a + a$?

- A a^4
- B $4a$
- C $a4$
- D $Aaaa$

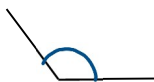
We can treat 'a' as a variable. As we have 4 of them, we can write it as $4a$

11.

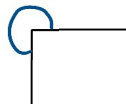
An angle of 270° is called:

- A obtuse
- B reflex
- C acute
- D a straight-angle

More than 90
Less than 180 degrees



More than 180
Less than 360 degrees



Less than 90 degrees



180 degrees



12.

Does a rectangle have rotational symmetry?

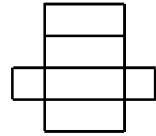
- A not enough information
- B sometimes
- C never
- D always

Imagine you draw a rectangle on a piece of paper, then turn the paper upside down (180 degrees) — the rectangle still looks exactly the same!

13.

Here is a net of a 3-D shape.

What 3-D shape can be made by folding up this net?



A a triangular prism

B a pyramid

C a cuboid

D a cube

Pyramids and triangular prisms will have triangles on their nets, and cubes are made of squares, thus this is a cuboid!

14.

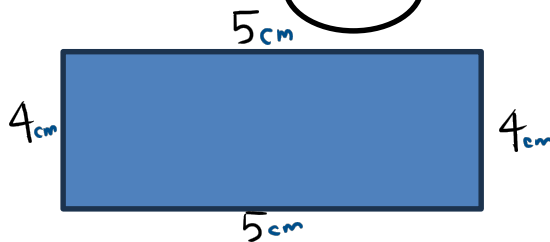
A rectangle has an area of 20 cm^2 . Its longer sides each measure 5 cm . What is its perimeter?

A 9cm

B 18cm

C 20cm

D 25cm



As Area = Length X Width, we can find the shorter side by dividing 20 with 5, which is 4.
Now we can find the perimeter by adding all 4 sides

15.

A triangle has angles of 80° and 20° . The third angle is:

A 20° B 100° C 80° D 180°

Angles in a triangle add up to 180° . So far 80° and 20° made 100° . Thus the third angle will be,
 $180^\circ - 100^\circ = 80^\circ$

16.

Four girls have an average height of 1.4 m . A boy, also of height 1.4 m , joins them. The average height of all five will:

A increase

B stay the same

C decrease

D can't say

Because the boy's height is the same as the group's average, the overall average doesn't change!

17.

What is the **mode** of these numbers? 1 1 1 2 3 4 6

A 2

B 5

C 1

D 18

The **mode** is the number that appears **most often** in a list of numbers.
The phrases 'most common,' 'most frequently occurring' and 'most popular' also mean we're talking about the mode!

18.

If a fair dice is rolled 30 times, how many times would you expect to get a "2"?

A 15

B 6

C 5

D 2

There are 6 numbers in a dice, and only one 2. So, the chances of getting a 2 is $\frac{1}{6}$
Since we roll the dice 30 times, you will get 2, $30 \times \frac{1}{6} = 5$ times

19.

One inch is about 2.5 cm. There are 12 inches in 1 foot. How many cm are there in two feet?

A 12 cm

B 14.5 cm

C 24 cm

D 60 cm

$\times 2 \left\{ \begin{array}{l} 1 \text{ foot} = 12 \text{ inches} \\ 2 \text{ feet} = 24 \text{ inches} \end{array} \right. \times 2$

$\times 2.5 \left\{ \begin{array}{l} 1 \text{ inch} = 2.5 \text{ cm} \\ 24 \text{ inches} = 60 \text{ cm} \end{array} \right. \times 2.5$

$$\begin{array}{r} 24 \\ \times 2.5 \\ \hline 120 \\ 480 \\ \hline 60.0 \end{array}$$

20.

Sam chooses a letter at random from the word **ATTITUDE**. Which word or phrase best describes his chances of choosing the letter **T**?

A likely

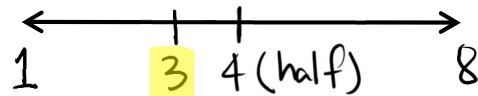
B uncertain

C unlikely

D even chance

Chances less than half means unlikely, half means even chance and more than half means likely.

$$\text{Chance of choosing T} = \frac{\text{Number of T in ATTITUDE}}{\text{Number of letters in ATTITUDE}} = \frac{3}{8} \text{ (less than half so unlikely)}$$



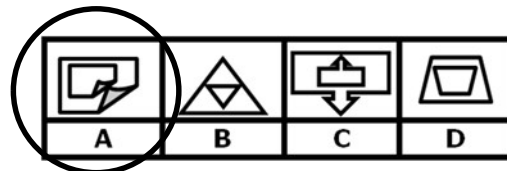
21.

Here are four shapes in a row. They all have something in common except one.

Which is the odd one out?

Circle the letter.

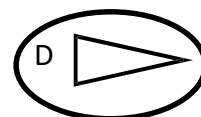
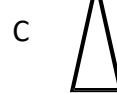
Every outer shape has a smaller kind of itself but inverted inside it, except A



22.

is to as is to:

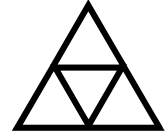
The shape is found by rotating it 90 degrees anticlockwise



23.

How many triangles are in this diagram?

(Remember that the triangles may be of different sizes!)



A 5

B 6

C 1

D 4

The big outer shape is a triangle itself and has 4 little triangles inside too. $4+1=5$

24.

If $a = 4$ and $b = 2$, what is $\frac{a+b+3}{3}$?

A 3

B 423

C 2

D 15

$$\frac{4 + 2 + 3}{3} = \frac{9}{3} = 3$$

25.

Will's calculator is broken. The + and the – buttons are the wrong way round.

What will he get if he types in $7 - 4 + 1$?

A 12

B 10

C 4

D 2

$7 - 4 + 1$ becomes $7 + 4 - 1 = 10$