

Question 1

What is another way of writing 3^2 ?

Circle the correct answer.

A 3×2

B 3×3

C $2 \times 2 \times 2$

D $3 \times 2 \times 2$

Question 2

Which has the same value as 4×9 ?

A $3 \times 12 + 2$

B $5 \times 8 - 6$

C $2 \times 12 + 10$

D $7 \times 5 + 1$

Question 3

Which jug has the most juice?



A



B



C



D

Question 4

Brandon travelled 24 metres in 3 seconds. What is his average speed in metres per second?

A 7

B 8

C 21

D 22

Question 5

Nikita wanted to buy these objects for her study: a lamp for \$38.64, a printer for \$62.27 and some software for \$83.98.

What is the best way to estimate the total cost?

A $\$30 + \$60 + \$80$

B $\$30 + \$70 + \$90$

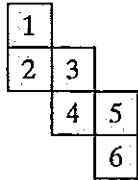
C $\$40 + \$60 + \$80$

D $\$40 + \$70 + \$90$

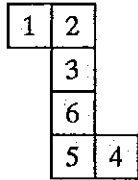
YEAR 7 NUMERACY SAMPLE TEST 2 – NON-CALCULATOR

Question 6

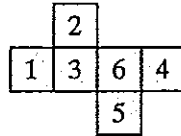
A die has all its opposite faces adding to seven. Which could be the net of this die?



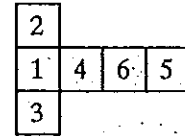
A



B



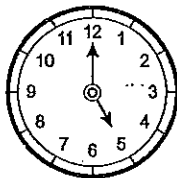
C



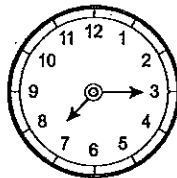
D

Question 7

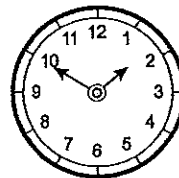
Which two clocks show the same time?



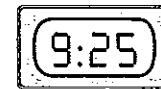
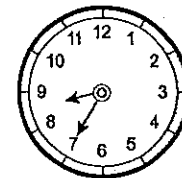
A



B



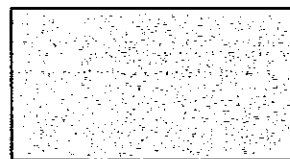
C



D

Question 8

The perimeter of this rectangle is 40 m.



8 m

What is the length of the rectangle?

Write your answer in the box.

m

Question 9

Which number is the largest?

A 0.06

B 0.15

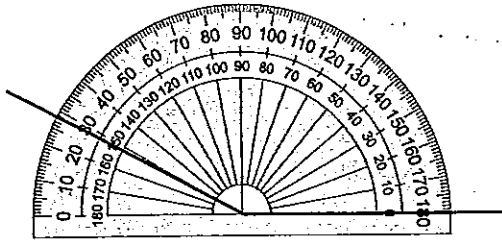
C 0.0087

D 0.123

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Question 10

What is the size of this angle?



Write your answer in the box.

Question 11

Which has the same value as $\frac{11}{3}$?

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

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

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

D $5\frac{1}{3}$

Question 12

A car uses 7 litres of petrol for every 100 km travelled.

Which is the best estimate for the amount of petrol (in litres) needed to travel 590 km?

A 40

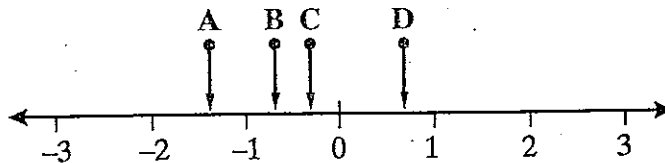
B 50

C 60

D 70

Question 13

Which arrow is pointing to the location of $-\frac{2}{3}$ on the number line?



A A

B B

C C

D D

YEAR 7 NUMERACY SAMPLE TEST 2 — NON-CALCULATOR

Question 14

Raffi used the rule 'Multiply the previous number by itself, then subtract one' to get the numbers in a pattern. The first number in his pattern is 2.

What is the fourth number?

Write your answer in the box.

Question 15

There are 30 jelly beans in a jar. 6 are black, 12 are green and the rest are red. Without looking, Tom chooses a jelly bean from the jar.

What is the chance of his picking a black jelly bean?

A 1 in 5

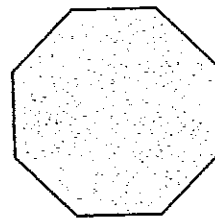
B 1 in 6

C 2 in 5

D 5 in 6

Question 16

How many lines of symmetry does this regular octagon have?



A 2

B 4

C 6

D 8

Question 17

What is \$20 as a percentage of \$50?

A 20%

B 25%

C 40%

D 50%

Question 18

What is the next number in this pattern?

10, 9.25, 8.5, 7.75, _____

Write your answer in the box.

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Question 19

The square bases of two identical pyramids are joined together. Compared to one of the original pyramids, the new object has

- A 3 more faces and 4 more edges.
- B 4 more faces and 4 more edges.
- C 4 more faces and 6 more edges.
- D 5 more faces and 8 more edges.

Question 20

The cost to post standard letters is \$0.55. The cost to post letters of a certain larger size depends upon their weight. Mitchell wants to send 60 sheets of A4 paper in a letter of the larger size. He knows that a sheet of A4 paper weighs about 5 grams. The table gives the cost for different weights.

Weight	Cost
Up to 125 grams	\$1.10
125 grams up to 250 grams	\$1.65
250 grams up to 500 grams	\$2.75

What should Mitchell's letter cost to post?

- A \$0.55 B \$1.10 C \$1.65 D \$2.75

Question 21

A photo is 12 cm long and 8 cm wide. It is enlarged so that it is now 48 cm wide.

How long is the enlarged photo?

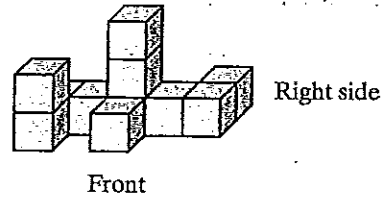
Write your answer in the box.

	cm
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YEAR 7 NUMERACY SAMPLE TEST 2—NON-CALCULATOR

Question 22

Phoebe made this 3D object by joining identical cubes.



What is the view from the left side?



A



B



C



D

Question 23

1 metre and 15 centimetres is the same as

A 1.015 m.

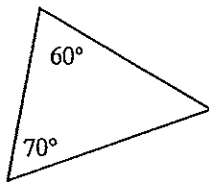
B 10015 mm.

C 1015 cm.

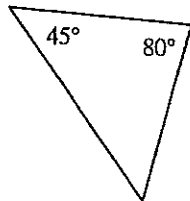
D 1150 mm.

Question 24

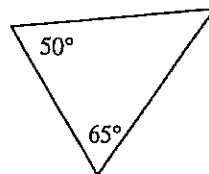
Which of these is an isosceles triangle?



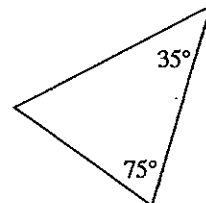
A



B



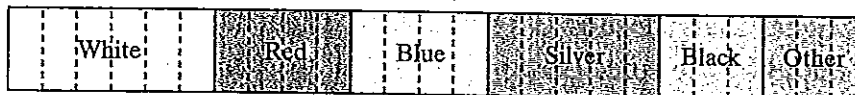
C



D

Question 25

Rita recorded the colour of 100 cars. This graph shows the results.



How many more white cars than red cars were recorded?

Write your answer in the box.

YEAR 7 NUMERACY SAMPLE TEST 2 – NON-CALCULATOR

Question 26

This is a map of Jill's farm.



The distance from the gate to the house is 300 metres.

What is the distance from the shed to the pump?

Write your answer in the box.

 m

Question 27

A test has questions on perimeter, area and volume. $\frac{2}{5}$ of the test is on area and $\frac{1}{3}$ is on volume. What fraction of the test is on perimeter?

A $\frac{5}{8}$

B $\frac{4}{15}$

C $\frac{3}{8}$

D $\frac{1}{5}$

Question 28

A committee has 2 students from Year 7, 3 from Year 8, 4 from Year 9 and 6 from Year 10. If the name of one of these students is picked from a hat, what is the chance that he or she is from Year 8?

A 1 in 3

B 1 in 4

C 1 in 5

D 1 in 8

Question 29

Lydia makes necklaces that she sells at a market for \$8 each. The cost, in dollars, to make the necklaces is found by the rule: 'Cost = 5 × the number of necklaces + 25'.

How much profit does Lydia make if she sells 10 necklaces?

A \$5

B \$25

C \$75

D \$80

YEAR 7 NUMERACY SAMPLE TEST 2 — NON-CALCULATOR

Question 30

A rectangular prism has a volume of 60 cubic metres. The prism is 4 m long and 3 m wide. How high is it?

Write your answer in the box.

 m

Question 31

Finn made this pattern with matches.

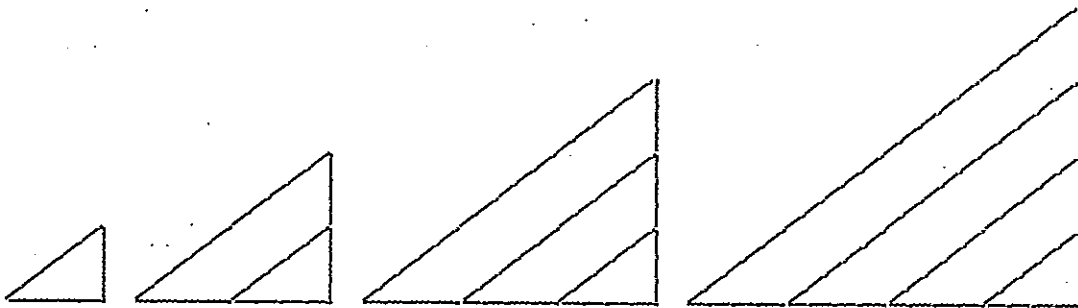


Figure	1	2	3	4	5
Matches	12	29	51	78	?

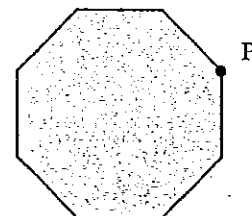
He recorded the number of matches needed for each figure in a table.

How many matches will be needed for figure 5?

Write your answer in the box.

Question 32

The diagram shows a regular octagon. What shapes could be placed next to the octagon to fill the space at P?



- A 2 regular pentagons
- B 4 equilateral triangles
- C 2 squares and an equilateral triangle
- D 1 regular octagon and a square

END OF TEST 2

- 1 B (Basic level)
- 2 D (Basic level)
- 3 D (Basic level)
- 4 B (Basic level)
- 5 C (Basic level)
- 6 C (Basic level)
- 7 C (Basic level)
- 8 12 m (Intermediate level)
- 9 B (Intermediate level)
- 10 152° (Intermediate level)
- 11 C (Intermediate level)
- 12 A (Intermediate level)
- 13 B (Intermediate level)
- 14 63 (Intermediate level)
- 15 A (Basic level)
- 16 D (Intermediate level)
- 17 C (Intermediate level)
- 18 7 (Intermediate level)
- 19 A (Advanced level)
- 20 D (Advanced level)
- 21 72 cm (Intermediate level)
- 22 A (Basic level)
- 23 D (Intermediate level)
- 24 C (Advanced level)
- 25 8 (Intermediate level)
- 26 1200 m (Intermediate level)
- 27 B (Advanced level)
- 28 C (Intermediate level)
- 29 A (Advanced level)
- 30 5 m (Advanced level)
- 31 110 (Advanced level)
- 32 D (Advanced level)

1 $3^2 = 3 \times 3$

The index, or power (2), tells us how many factors of the number are multiplied together.

2 $4 \times 9 = 36$

Now consider the options:

$3 \times 12 + 2 = 36 + 2 = 38$

$5 \times 8 - 6 = 40 - 6 = 34$

$2 \times 12 + 10 = 24 + 10 = 34$

$7 \times 5 + 1 = 35 + 1 = 36$

The expression that equals 4×9 is $7 \times 5 + 1$.

- 3 The scale on jug D has 2.5 litres divided into 10 parts so each part is 0.25 litres or 250 mL. So jug D holds 2 litres of juice. No other jug has 2 litres of juice so jug D has the most.



4 $24 \text{ m in } 3 \text{ seconds} = (24 \div 3) \text{ m/s} = 8 \text{ m/s}$

- 5 The lamp (at \$38.64) is closer to \$40 than \$30. The printer (at \$62.27) is closer to \$60 than \$70. The software (at \$83.98) is closer to \$80 than \$90. The best way to estimate the cost is $\$40 + \$60 + \$80$.

- 6 The opposite faces must add to 7. This means that Face 1 must be opposite Face 6, Face 2 opposite Face 5 and Face 3 opposite Face 4.

This only occurs with Option C.

[Option A has 1 opposite 4, 2 opposite 5 and 3 opposite 6. Option B has 1 opposite 4, 2 opposite 6 and 3 opposite 5. Option D has 1 opposite 6, 2 opposite 3 and 4 opposite 5.]

- 7 Consider the options:

The analogue clock in A shows 5 o'clock while the digital clock shows 12:25.

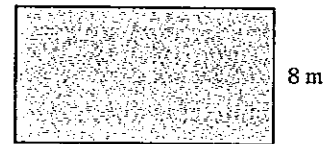
The analogue clock in B shows a quarter past 7 or 7:15 while the digital clock shows 8:15.

The analogue clock in C shows ten minutes to 2 o'clock or 1:50 and the digital clock also shows 1:50.

The analogue clock in D shows 25 minutes to 9 o'clock or 8:35 while the digital clock shows 9:25.

The two clocks in C show the same time.

- 8 The perimeter is 40 m so the sum of the length and width must be 20 m.

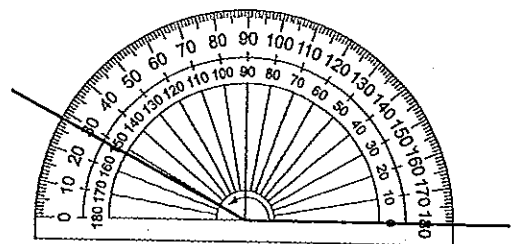


So $8 \text{ m} + \text{the length} = 20 \text{ m}$

The length = $(20 - 8) \text{ m} = 12 \text{ m}$

- 9 Write each decimal with the same number of places after the decimal point. 0.0600, 0.1500, 0.0087, 0.1230. So, in order, from lowest to highest, the numbers are 0.0087, 0.0600, 0.1230 and 0.1500. The largest number is 0.15.

- 10 The angle is 152°.



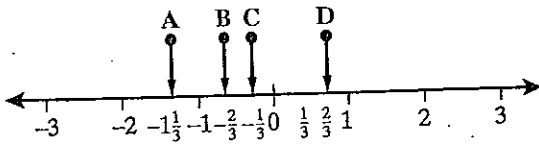
The scale on the protractor must be the inside one, because it begins at 0° where the angle begins.

11 $\frac{11}{3} = 3\frac{2}{3}$

[3 divides into 11 three times with remainder of 2.]

- 12 The car uses 7 litres for every 100 km. Now 590 km is a little under $6 \times 100 \text{ km}$ so the fuel used will be a little less than 6×7 litres. As $6 \times 7 = 42$, the best estimate will be 40 litres.

- 13 Write in some of the values on the number line.



The location of $-\frac{2}{3}$ is B.

- 14 The first number is 2.

$$\begin{aligned} \text{The second number} &= 2 \times 2 - 1 \\ &= 4 - 1 \\ &= 3 \end{aligned}$$

$$\begin{aligned} \text{The third number} &= 3 \times 3 - 1 \\ &= 9 - 1 \\ &= 8 \end{aligned}$$

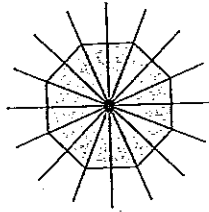
$$\begin{aligned} \text{The fourth number} &= 8 \times 8 - 1 \\ &= 64 - 1 \\ &= 63 \end{aligned}$$

- 15 There are 30 jelly beans in the jar.

6 of the jelly beans are black.

$$\begin{aligned} \text{Chance of black} &= 6 \text{ in } 30 \\ &= 1 \text{ in } 5 \end{aligned}$$

- 16 The octagon has 8 lines of symmetry.



$$\begin{aligned} 17 \quad \frac{\$20}{\$50} &= \frac{40}{100} \\ &= 40\% \end{aligned}$$

- 18 10, 9.25, 8.5, 7.75, ...

$$10 - 9.25 = 0.75$$

$$\begin{array}{r} 10.00 \\ - 9.25 \\ \hline 0.75 \end{array}$$

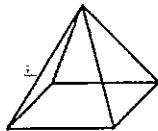
$$9.25 - 8.5 = 0.75$$

$$\begin{array}{r} 9.25 \\ - 8.50 \\ \hline 0.75 \end{array}$$

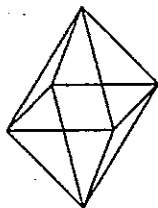
The numbers are decreasing by 0.75 each time.

$$\begin{aligned} \text{The next number} &= 7.75 - 0.75 \\ &= 7 \end{aligned}$$

- 19 A square-based pyramid has 5 faces and 8 edges.



The new object has 8 faces and 12 edges.



So the new object has 3 more faces and 4 more edges.

- 20 Weight of Mitchell's letter = 60×5 g
= 300 g

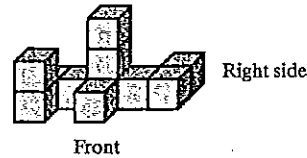
So the weight is between 250 g and 500 g.

The cost to post the letter is \$2.75.

- 21 Old width = 8 cm
New width = 48 cm
Number of times larger = $48 \div 8$
= 6

$$\begin{aligned} \text{Old length} &= 12 \text{ cm} \\ \text{New length} &= 6 \times 12 \text{ cm} \\ &= 72 \text{ cm} \end{aligned}$$

- 22 From the front the object is 5 blocks wide and 3 blocks deep.



So from the left side the object will be 3 blocks wide.

From the front the blocks are 2 high in the first row, 3 high in the second and 1 high in the third.

From the left side, blocks in the front row will be on the right and blocks in the back row will be on the left.

So the view from the left side is A.



- 23 1 m and 15 cm = 100 cm + 15 cm
= 115 cm

[But this is not one of the options.]

Now 100 cm = 1 m

So 115 cm = 1.15 m

[But this is not one of the options.]

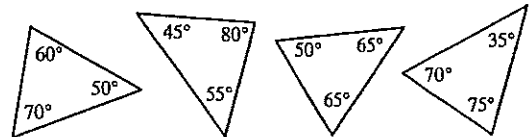
Now 1 cm = 10 mm

So 115 cm = 1150 mm

The correct option is D.

- 24 The angles of a triangle add to 180° .

So you can find the size of the third angle in each triangle.



Triangle C is isosceles because it has two equal angles.

- 25 The graph represents 100 cars. The graph is divided into 25 sections so each section represents 4 cars.



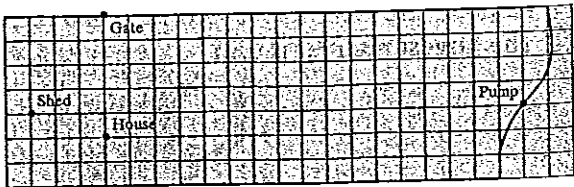
$$\begin{aligned} \text{Number of white cars} &= 6 \times 4 \\ &= 24 \end{aligned}$$

$$\begin{aligned} \text{Number of red cars} &= 4 \times 4 \\ &= 16 \end{aligned}$$

$$\begin{aligned} \text{Difference} &= 24 - 16 \\ &= 8 \end{aligned}$$

There were 8 more white cars than red cars.

- 26 On the map it is 5 squares from the gate to the house.



So 5 squares represent 300 m.
So 1 square represents $300 \text{ m} \div 5$ or 60 m.

There are 20 squares from the shed to the pump.

$$\begin{aligned} \text{Distance} &= 20 \times 60 \text{ m} \\ &= 1200 \text{ m} \end{aligned}$$

27 Fraction on area and volume $= \frac{2}{5} + \frac{1}{3}$

$$= \frac{6}{15} + \frac{5}{15}$$

$$= \frac{11}{15}$$

Fraction on perimeter $= 1 - \frac{11}{15}$

$$= \frac{4}{15}$$

28 Number on committee $= 2 + 3 + 4 + 6$

$$= 15$$

The number of students from Year 8 is 3.

The chance that the student is from Year 8 is 3 in 15 or 1 in 5.

- 29 If Lydia sells 10 necklaces the amount she receives is $10 \times \$8$ or \$80.

Cost to produce 10 necklaces:

$$\begin{aligned} \text{Cost} &= 5 \times 10 + 25 \\ &= 50 + 25 \\ &= 75 \end{aligned}$$

The cost to make the necklaces is \$75.

$$\begin{aligned} \text{Profit} &= \$80 - \$75 \\ &= \$5 \end{aligned}$$

- 30 Volume = length \times width \times height

$$\text{So } 4 \times 3 \times \text{height} = 60$$

$$12 \times \text{height} = 60$$

$$\text{height} = 60 \div 12$$

$$= 5$$

The height is 5 metres.

31

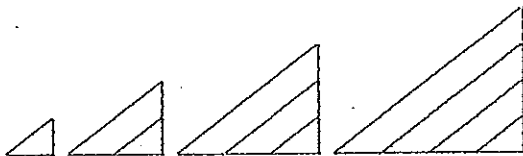


Figure	1	2	3	4	5
Matches	12	29	51	78	?

The differences between the numbers of matches are 17, then 22, then 27. The difference is increasing by 5 each time. The next difference will be 32.

$$\begin{aligned} \text{The next number of matches} &= 78 + 32 \\ &= 110 \end{aligned}$$

So the number of matches needed for figure 5 is 110.

- 32 A regular octagon has 8 equal angles.

$$\begin{aligned} \text{Angle sum} &= 6 \times 180^\circ \\ &= 1080^\circ \end{aligned}$$

$$\begin{aligned} \text{Each angle} &= 1080^\circ \div 8 \\ &= 135^\circ \end{aligned}$$

Angles at a point add to 360° .

$$\begin{aligned} \text{Total of remaining angles} &= 360^\circ - 135^\circ \\ &= 225^\circ \end{aligned}$$

Now consider each option.

Regular pentagons have 5 equal sides.

$$\begin{aligned} \text{Angle sum} &= 3 \times 180^\circ \\ &= 540^\circ \end{aligned}$$

$$\begin{aligned} \text{Each angle} &= 540^\circ \div 5 \\ &= 108^\circ \end{aligned}$$

$$\begin{aligned} \text{So angles of 2 pentagons} &= 2 \times 108^\circ \\ &= 216^\circ \end{aligned}$$

2 pentagons will not fill the space.

Equilateral triangles have angles of 60° .

$$\begin{aligned} \text{Angles of 4 equilateral triangles} &= 4 \times 60^\circ \\ &= 240^\circ \end{aligned}$$

So 4 equilateral triangles cannot be placed next to the octagon at P.

Squares have angles of 90° .

$$\begin{aligned} \text{Angles of 2 squares and an equilateral triangle} &= 2 \times 90^\circ + 60^\circ \\ &= 180^\circ + 60^\circ \\ &= 240^\circ \end{aligned}$$

2 squares and an equilateral triangle cannot be placed next to the octagon at P.

$$\begin{aligned} \text{Angles of 1 regular octagon and 1 square} &= 135^\circ + 90^\circ \\ &= 225^\circ \end{aligned}$$

The shapes that will fill the space are a regular octagon and a square.

