



THE PERSE
SCHOOL
CAMBRIDGE

Year 7 (11+) Entrance Assessments

Sample Maths Paper 2

SOLUTIONS

1. Write in the missing numbers:

(a) $23 \times \boxed{30} = 690$

(b) $\boxed{352} - \boxed{87} = 265$

2. Here is a grid made up of rectangles.

| | | | | | | | | |
|-----|-----|-----|--|--|--|--|--|--|
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| | | | | | | | | |

Shade 20% of this grid.

$$8 \times 5 = 40$$
$$\frac{1}{5} \text{ of } 40 = 8$$

3. Hamster food costs 70p for 40 grams.

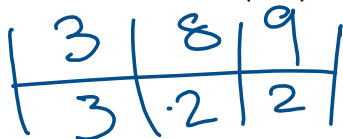
What is the cost of 100g of hamster food.

$$\begin{array}{ll} 40\text{g} & 70\text{p} \\ 4\text{g} & 7\text{p} \\ 100\text{g} & 175\text{p} \end{array} \quad \begin{array}{l} \\ \\ \uparrow \times 25 \end{array}$$

Answer: 175 p

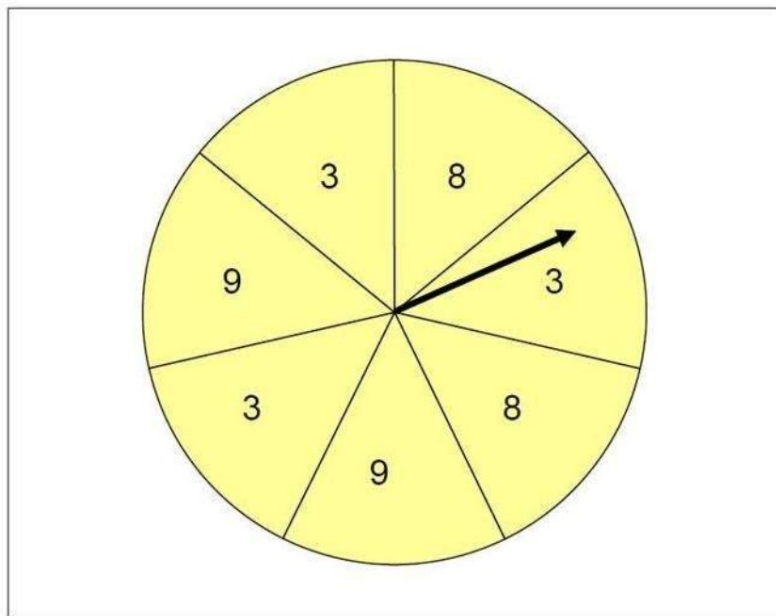
4. The spinner below is divided into seven equal sections.

(i) Which two numbers are equally likely to come up?



Answer: 8, 9

(ii) Bob says "3 has a less than even chance of coming up".



Is he right?

Answer: Yes

Explain your answer:

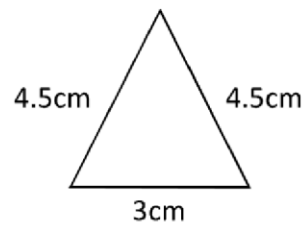
3 has $\frac{3}{7}$ chance,
which is less than $\frac{1}{2}$.

5. Bob's bucket weighs 21kg when full of water. After he pours half the water from the bucket, it weighs 12kg. What is the weight of the empty bucket?

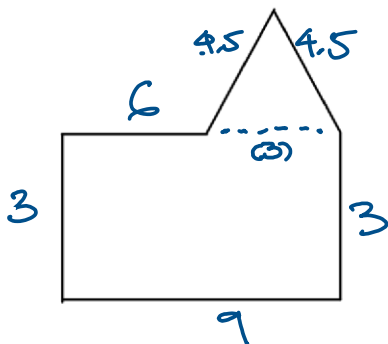
$$\frac{1}{2} \text{ water} \rightarrow 9 \text{ kg}$$
$$\text{all water} \rightarrow 18 \text{ kg}$$

Answer: 3 kg

6. Bob has one rectangular tile and one triangular tile like those shown below. [Diagrams not drawn to scale]



He uses them to make this shape.



What is the perimeter of Bob's shape?

Answer: 30 cm

7. Calculate each of the following

(a) $8547 + 929$

Answer: 9476

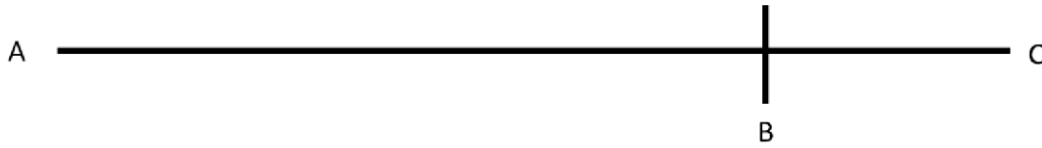
(b) $3712 - 1821$

Answer: 1891

(c) 3.6×9

Answer: 32.4

8. An ant is travelling along the straight line AC as shown below. The distance from A to B is four times as far as the distance from B to C. The distance from A to C is 80cm. [diagram not drawn to scale]



- (a) Find the distance from A to B in centimetres

$$\frac{80}{5} = 16, \quad 16 \times 4 = 64$$

Answer: 64 cm

- (b) Write down the distance from B to C in millimetres

16 cm

Answer: 160 mm

9. Circle the number nearest to 0.1

0.2 0.101 0.11 0.99 0.0998 1.0
 0.1 0.001 0.1 0.01 0.0002 0.9

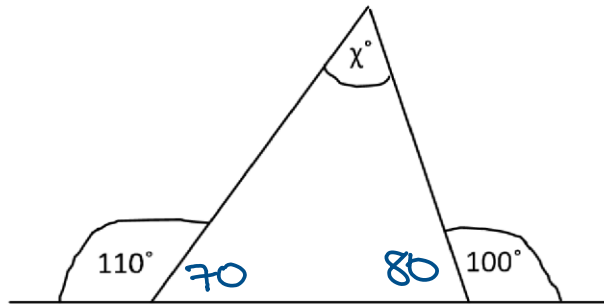
10. Yesterday, the reading on Mr Smith's electricity meter was 098157. He was shocked to realise that all six of these digits are different. How many more units of electricity will he use before the next time all the digits are different?

$$58 \times 59 \times 60 \times 61 \times$$

$$098162$$

Answer: 5

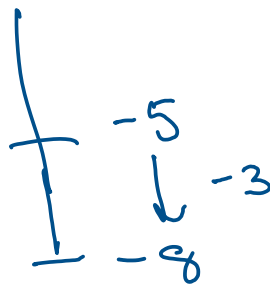
11. What is the size of the angle marked χ in the diagram below? [diagram not drawn to scale]



$$180 - 70 - 80$$

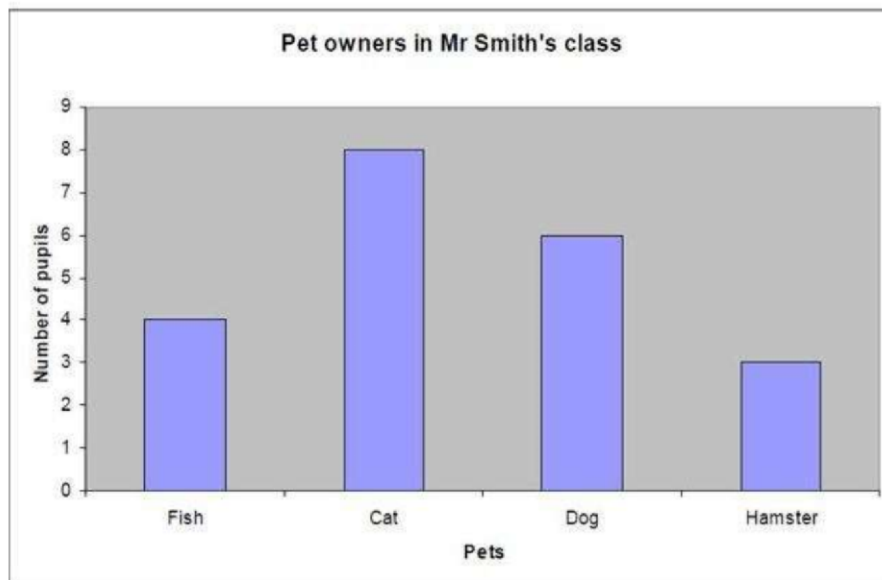
Answer: $\chi =$ 30

12. On Christmas day the temperature in Lisbon was -5°C . On New Year's day the temperature was 3 degrees lower. What was the temperature on New Year's day?



Answer: -8 $^\circ\text{C}$

13. The bar chart shows the number of children who own a pet in Mr Smith's class.



(a) How many own a hamster?

3

Answer: _____

(b) If there are 31 pupils in Mr Smith's class, how many do not own any of the above animals?

$$4 + 8 + 6 + 3 = 21$$

10

Answer: _____

(c) What fraction of the children with pets, own a dog?

$$\frac{6}{21} = \frac{2}{7}$$

$\frac{2}{7}$

Answer: _____

14. When each diagram below is complete the number in the middle of each group of 3 adjoining cells is the average of its two neighbours. Fill in the missing numbers.



15. Mr Smith is planning to catch the 10:47am plane flight from Heathrow to Edinburgh and has been told to check in at the airport one and a half hours before the flight. It will take him one hour and twenty minutes to get from his home in Cambridge to Heathrow. The flight takes 55mins from Heathrow to Edinburgh.

- (a) At what time is his flight due to arrive in Edinburgh?

$$10:47 + .55 \text{ min}$$

11:42

Answer: _____

- (b) What is the latest time he should leave Cambridge to catch his flight?

$$10:47 - 1 \text{ hr } 30 = 9:17$$

$$9:17 - 1 \text{ hr } 20 = 7:57$$

7:57am

Answer: _____

[or $1:30 + 1:20 = 2:50$]

16. $28 \times 97 = 2716$

Use this result to write down the answers to each of the following:

- (a) 28×970

27160

Answer: (a) 2716

- (b) 2.8×0.97

Answer: (b) _____

17. Tara and Paul have created a mathematical rule where $[x]$ is the largest whole number that is **less** than x .

For example, $[3.17] = 3$ and $[90] = 89$ and $[-2.3] = -3$

a. Calculate $2.5 - 1 = 1.5 //$
 $2.5 - [1.5]$

b. Calculate $5 + 3 = 8 //$
 $[5.4] + [3.7]$

c. Calculate $3.4 \times 1 = 3.4$
 $[3.4 \times [1.23]]$
 $[3.4] = 3 //$

- d. Tara thinks that $[[2.86] \times [0.25]] = 0$, but Paul thinks the answer is -1 .

Who do you agree with? Explain why.
 $[2.86] = 2$, $[0.25] = 0$

So $[2.86] \times [0.25] = 2 \times 0 = 0$
 and $[0] = -1$
 So Paul is right.

Now check through your work carefully!