## Key Stage 2

Mathematics
Reasoning: Pack 3 Test 3a

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## Key Stage 2 Maths Reasoning: Pack 3 Test 3a

1. Complete the following to show an equivalent fraction.
$\frac{3}{4}=\frac{}{12}$
$\frac{5}{6}=\frac{15}{}$
2. Here is a triangle.

Measure the length of each side.

3. Complete each net to make a square based pyramid.

4. Order the following fractions from the smallest to the largest.
$\frac{6}{5}$
$\frac{9}{8}$
$\frac{14}{12}$
$1 \frac{1}{4}$

smallest
5. Complete the following subtraction calculation.


- 457

4646
6. Here is a number:

3709276
Write down the values of the digit 7 as it is used in this number.

7. Write the number 2803 in Roman numerals.

8. A market stall sells marbles in bags of ten.

A bag of 10 marbles weighs 34.5 g .
The bag that holds the marbles weighs 0.05 g .
a) What is the mean weight of each marble?

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b) Round the mean weight of each marble to the nearest tenth of a gram.

१. Amy buys a 2 litre bottle of lemonade for herself and her seven friends to share.

She pours the bottle equally amongst the glasses.
How much lemonade will be poured into each glass?

10.A teacher orders pizzas for an end of term party. Before doing so, the teacher asks the children what are their favourite toppings.
The results are recorded on a pictogram.

a) How many children took part in the survey?

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b) How many more children chose pizzas with meat toppings than pizzas without a meat topping?

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11. The first number in the sequence $7 n+2$ is 9 .

What is the 10th number in the sequence?

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12.A school orders 6 boxes of pencil sharpeners.

Each box contains 8 packets of sharpeners.
Each packet contains 5 sharpeners.
a) How many sharpeners does the school order?

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Each box of pencil sharpeners costs $£ 2.70$
b) How much does each pencil sharpener cost to the nearest penny?

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13. The decimal numbers in these 3 circles total 1 .


Write 3 other decimal numbers with 2 decimal places that total 1.

14. This shape is reflected about the vertical line. Draw the new shape.

15. Janek leaves for school at 8.25 am and returns at 3.35 pm .

His walk to and from school takes 20 minutes each way.
How long does he spend at school each day?

16. A class record the temperature in the school playground every hour during a winter's day.

This bar chart shows the recorded temperatures.

a) What is the difference between the highest and lowest temperatures measured?

b) How many measurements are below $3^{\circ} \mathrm{C}$ ?

c) When is the largest change in temperature between measurements?

17. Here is a rectilinear shape.

12 cm


What is the perimeter of the shape?

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18. A school needs to replace the batteries on a set of 32 laptops.

Each battery costs $£ 23.75$.
How much will 32 batteries cost?

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19. A regular hexagon is drawn on this coordinates grid.


Calculate the coordinates of the corners $A$ and $B$ of the regular hexagon.

20.A class want to record the length of a shadow throughout the school day.

They place a rounders pole in the playground and measure the length of the shadow on the hour, every hour during the school day.
They record the information in a table.

| Time | $09: 00$ | $10: 00$ | $11: 00$ | $12: 00$ | $13: 00$ | $14: 00$ | $15: 00$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Length of shadow $(\mathrm{cm})$ | 1.57 | 1.22 | 0.97 | 0.84 | 0.98 | 1.24 | 1.61 |

Using the grid below, draw a line graph that shows the results from the table.


| question | answer | marks | notes |
| :---: | :---: | :---: | :---: |
| 1. |  |  |  |
|  | $\frac{9}{12}$ and $\frac{15}{18}$ | 1 | 1 mark for both correct. |
| 2. |  |  |  |
|  | $4.1 \mathrm{~cm}, 11.8 \mathrm{~cm}, 10.2 \mathrm{~cm}$ or <br> $41 \mathrm{~mm}, 118 \mathrm{~mm}, 102 \mathrm{~mm}$ | 2 | 2 marks for all correct with appropriate use of unit. <br> 1 mark if missing units but appropriate numbers. <br> 1 mark for 2 correct with units. |
| 3. |  |  |  |
|  | Possible answers: <br> Examples: Left: <br> Right: | 2 | 1 mark for each correct answer, allowing any correct response for each net. <br> Accept any other correct variations of the nets. |
| 4. |  |  |  |
|  | $\frac{9}{8}, \frac{14}{12}, \frac{6}{5}, 1 \frac{1}{4}$ | 1 |  |
| 5. |  |  |  |
|  | $\begin{array}{r} 5103 \\ -457 \\ \hline 4646 \end{array}$ | 1 |  |
| 6. |  |  |  |
|  | 700000 and 70 or seven hundred thousand and seventy | 1 | 1 mark for both. <br> Allow a combination of words and numbers as along as answer is correct. |
| 7. |  |  |  |
|  | MMDCCCIII | 1 |  |
| 8. |  |  |  |
| a | 3.445 g | 1 |  |
| b | 3.4 g | 1 | 1 mark for a correct rounding of an incorrect answer to Q8a. |


| question | answer | marks | notes |
| :---: | :---: | :---: | :---: |
| 9. |  |  |  |
|  | 0.25 or 250 ml | 2 | 2 marks for correct answer with units. 1 mark for correct answer without units and evidence of correct calculation to derive answer. |
| 10. |  |  |  |
| a | 60 | 1 |  |
| b | 14 (37-23) | 1 |  |
| 11. |  |  |  |
|  | 72 | 1 |  |
| 12. |  |  |  |
| a | 240 sharpeners | 2 | 2 marks for correct answer. <br> 1 mark for multiplying $6 \times 8 \times 5$ with 1 error in calculation. |
| b | $7 \mathrm{p}(6.75 p)$ or $£ 0.07$ | 2 | 2 marks for correct answer, with correct units. <br> 1 mark for dividing $£ 2.70$ by 40 , but getting an incorrect answer which is rounded correctly, or for getting 6.75p, but incorrectly rounding to 6 p or writing the correct answer with no units (7 or 0.07). |
| 13. |  |  |  |
|  | Any 3 decimal numbers with 2 decimal places that total 1. | 1 | Do not give credit for using 0 in the hundredths place. <br> e.g. $0.40+0.25+0.35$ is not allowed. |
| 14. |  |  |  |
|  |  | 1 | 1 mark for correct answer. |


| question | answer | marks | notes |
| :---: | :---: | :---: | :---: |
| 15. |  |  |  |
|  | 6.5 hours | 2 | 2 marks for correct answer, written in any appropriate form (e.g 6 hours 30 minutes, 390 minutes). <br> 1 mark for correct method with only 1 error in calculating. |
| 16. |  |  |  |
| a | $15^{\circ} \mathrm{C}$ | 1 |  |
| b | 5 | 1 |  |
| C | 08:00 to 09:00 | 1 |  |
| 17. |  |  |  |
|  | 42 cm | 2 | 2 marks for correct answer. <br> 1 mark for evidence of correctly identifying the unknown sides (horizontal add up to 12 cm and vertical add up to 9 cm ). |
| 18. |  |  |  |
|  | $£ 760$ | 2 | 2 marks for correct answer with units. 1 mark for correct answer but no units written. <br> 1 mark for incorrect answer but correct calculation with 1 error. |
| 19. |  |  |  |
|  | $\begin{aligned} & A(-25,6) \\ & B(20,-12) \end{aligned}$ | 2 | 2 marks for both correct or 1 mark for 1 correct |



