



## Week 10

Fractions, Percentages and Decimals

Name: \_\_\_\_\_

Class: \_\_\_\_\_

Date: \_\_\_\_\_

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Time: **43 minutes**

Marks: **43 marks**

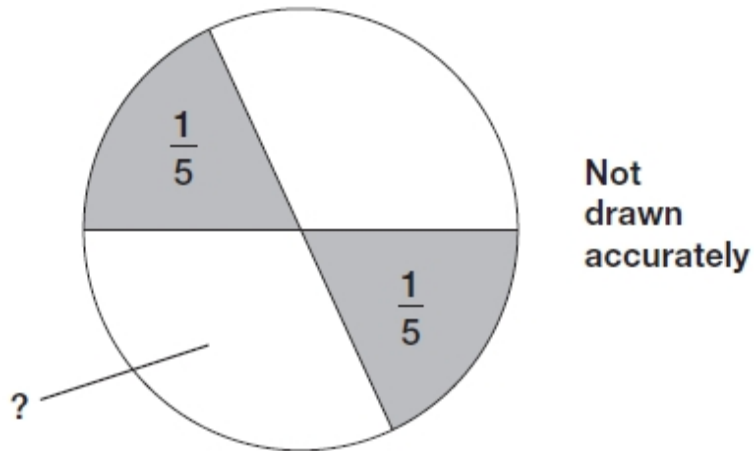
Comments:

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1

In this circle, each shaded part is  $\frac{1}{5}$  of the area of the circle.

The two white parts have equal areas.



What fraction of the circle is **one** of the white areas?

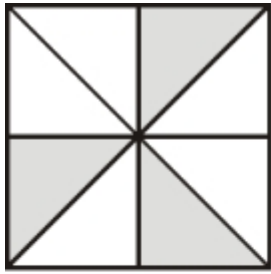
Show your method

2 marks

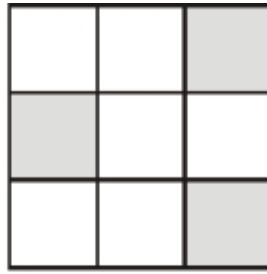
2

Each of these diagrams is divided into equal parts.

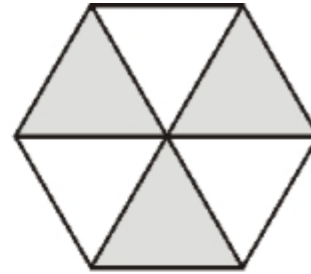
Some of the parts are shaded.



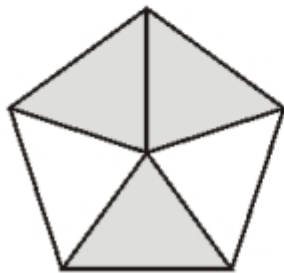
A



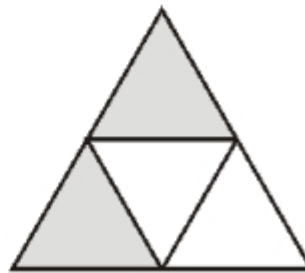
B



C



D



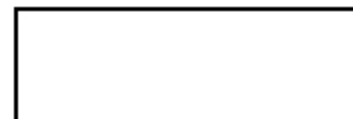
E

Write the letters of all the diagrams that have exactly  $\frac{1}{2}$  shaded.

\_\_\_\_\_

1 mark

Which of the diagrams has exactly  $\frac{1}{3}$  shaded?

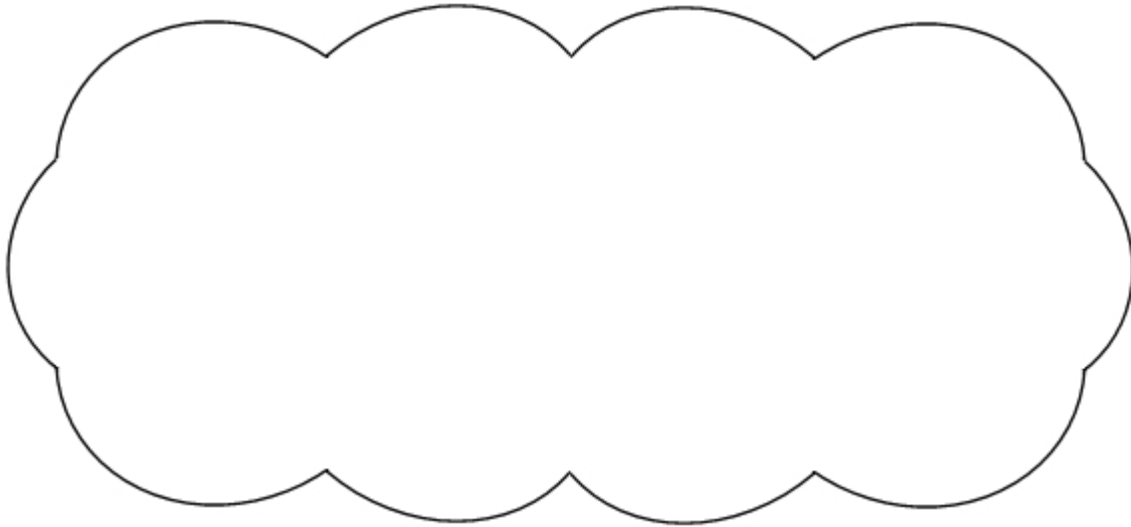


1 mark

3

Anna says  $\frac{4}{7}$  is greater than  $\frac{5}{9}$

Explain why Anna is correct.



1 mark

4

Join each fraction to the correct decimal card.

The first one has been done for you.

$$\frac{3}{10}$$

0.03

$$\frac{3}{5}$$

0.06

$$\frac{3}{100}$$

0.3

$$\frac{3}{50}$$

0.6

1 mark

5

What is 10% of a half?



1 mark

What percentage of 20 is 19?

 %

1 mark

6

200 children went on holiday.

10% of the children went to Wales.

25% of the children went to Scotland.

How many **more** children went to Scotland than went to Wales?

Show your method

children

2 marks

7

In a survey of children's favourite fruit juices, these were the results.

Juice	Apple	Orange	Grape	Mango
Percentage of children	25%	14%	30%	31%

- (a) **20 more** children chose grape than chose apple.

How many children took part in the survey?

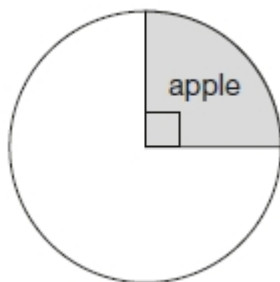
Show  
your  
method

children

2 marks

- (b) Chen makes a pie chart to show the results.

What **angle** should he use for the children who chose **mango**?



o

1 mark

8

$n$  and  $p$  stand for two numbers.

$n$  is a multiple of 5

$p$  is a multiple of 6

$$\frac{n}{p} = \frac{2}{3}$$

Find numbers that  $n$  and  $p$  stand for.

Show  
your  
method

$n =$

$p =$

2 marks

9

Write the missing fraction.

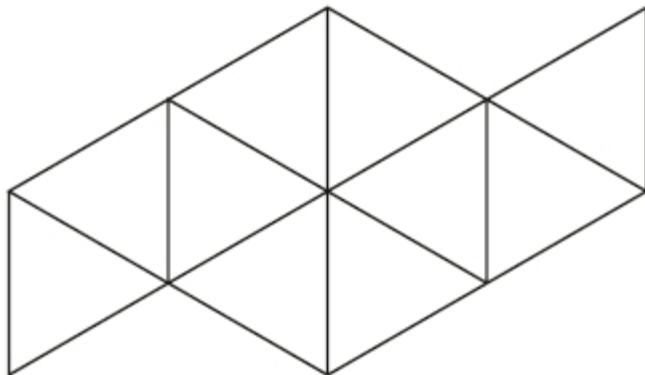
$$\frac{1}{3} + \frac{1}{4} + \boxed{\phantom{00}} = 1$$

1 mark



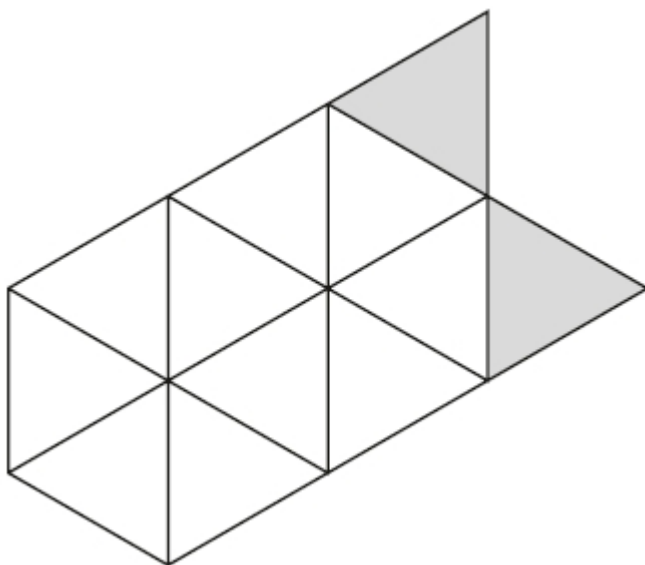
10

Shade  $\frac{1}{5}$  of this shape.



1 mark

Shade **more** triangles on this shape so that is  $\frac{1}{3}$  shaded



1 mark

11

Calculate 55% of 640

1 mark

12

Write these numbers in order, starting with the **smallest**.

0.78

0.607

5.6

0.098

4.003

**smallest**

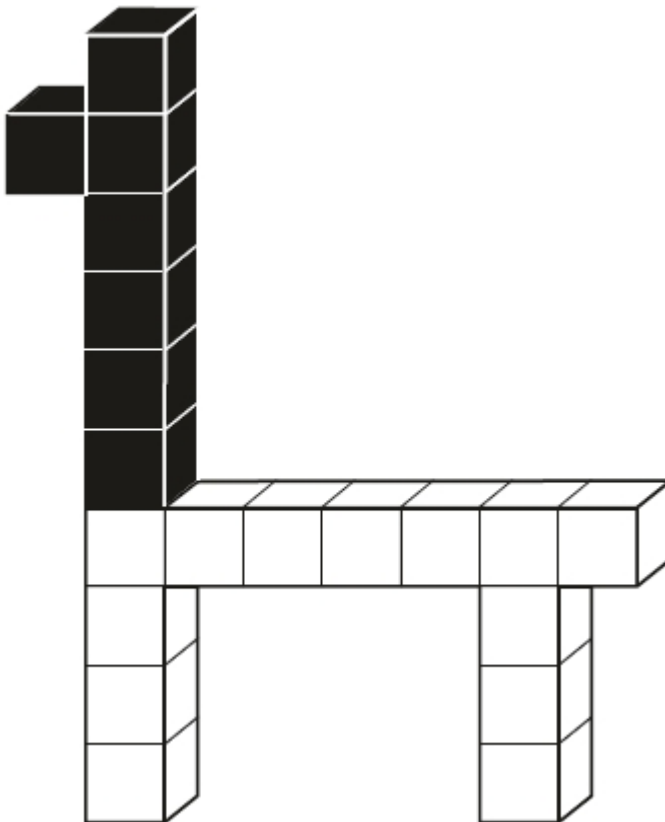




1 mark

13

This model is made with 20 cubes.



What **percentage** of the cubes in the model is black?

 %

1 mark

14

The mass of a 10p coin is 6.5 g.

The mass of a 5p coin is half the mass of a 10p coin.

What is the mass of these six coins **altogether**?



Show  
your  
method

g

2 marks

15

On Saturday Lara read  $\frac{2}{5}$  of her book.



On Sunday she read the **other** 90 pages to finish the book.

How many pages are there in Lara's book?

Show  
your  
method

2 marks

16

What number is halfway between 1.4 and 2.1?

--

1 mark

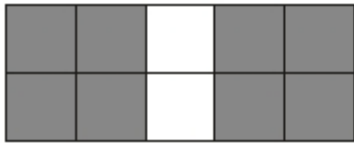
17

Here are some shapes made of squares.

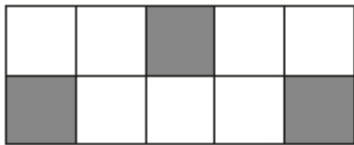
A fraction of each shape is shaded.

Match each shape to its equivalent fraction.

One has been done for you.



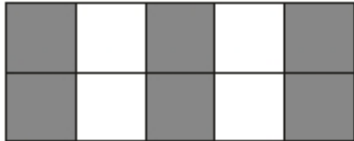
$$\frac{7}{10}$$



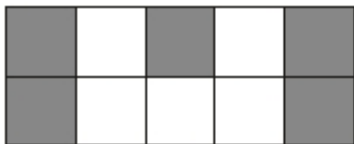
$$\frac{3}{5}$$



$$\frac{1}{2}$$



$$\frac{4}{5}$$

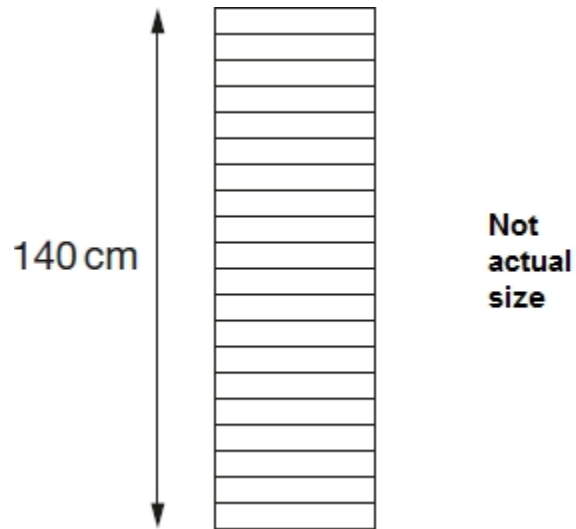


$$\frac{3}{10}$$

2 marks

18

A stack of 20 identical boxes is 140 cm tall.



Stefan takes **three** boxes off the top.

How tall is the stack now?

Show your method

cm

2 marks

19

Write these numbers in order of size, starting with the **smallest**.

1.9

0.96

1.253

0.328





**smallest**

1 mark

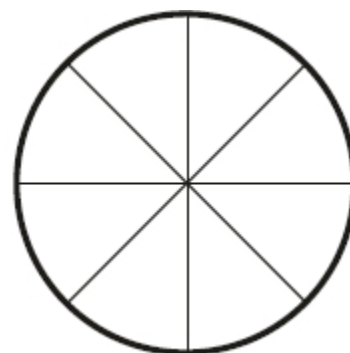
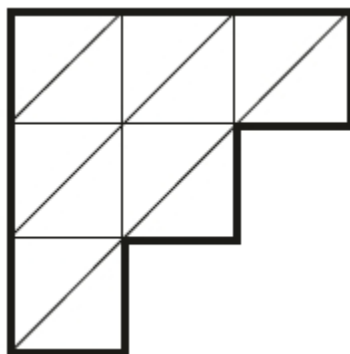
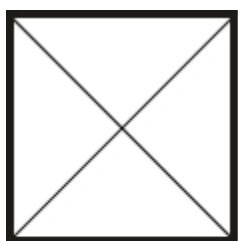
- 20** Circle two numbers that add together to equal **0.25**

0.05      0.23      0.2      0.5

1 mark

- 21** Each diagram below is divided into equal sections.

Shade three-quarters of each diagram.



2 marks

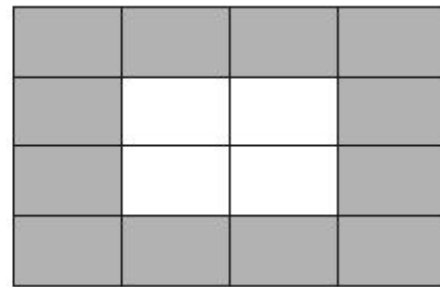
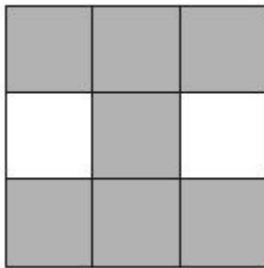
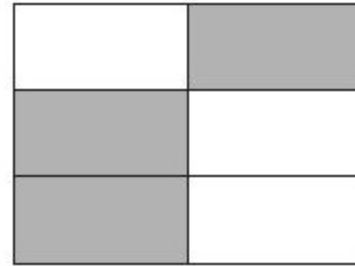
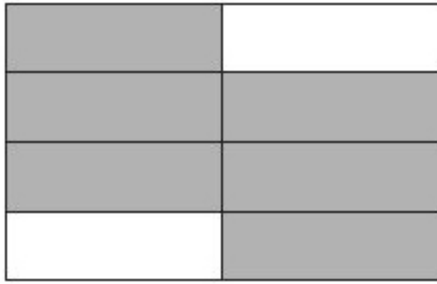
- 22** Write the two missing values to make these equivalent fractions correct.

$$\frac{\boxed{\phantom{000}}}{3} = \frac{8}{12} = \frac{4}{\boxed{\phantom{000}}}$$

2 marks

23

Tick two shapes that have  $\frac{3}{4}$  shaded.



1 mark



**24**

In each box, circle the number that is **greater**.

$$1\frac{1}{2}$$

1.2

$$1\frac{1}{4}$$

1.3

$$1\frac{5}{100}$$

1.4

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

1.5

2 marks

**25**

A cat sleeps for **12 hours** each day.

**50%** of its life is spent asleep.



Write the missing percentage.

A koala sleeps for **18 hours** each day.

%

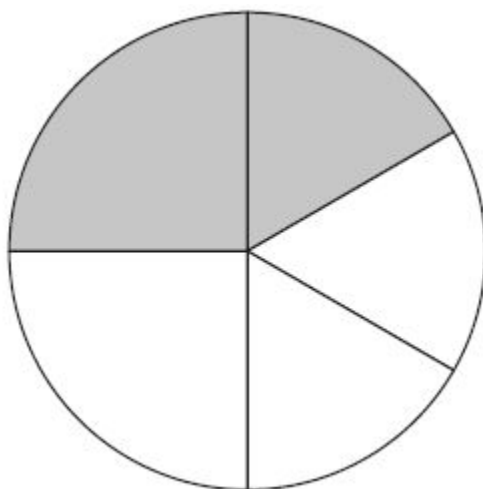
of its life is spent asleep.



1 mark

26

In this circle,  $\frac{1}{4}$  and  $\frac{1}{6}$  are shaded.



What fraction of the whole circle is **not** shaded?

Show your method

2 marks

27

Adam says,

0.25 is smaller than  $\frac{2}{5}$



Explain why he is correct.

1 mark

## Mark schemes

1

$\frac{3}{10}$  or equivalent

*Accept equivalent fractions, decimals or percentages*

2

**or**

Shows or implies a complete correct method and no conceptual errors, eg:

- Shaded fraction is  $\frac{1}{5} + \frac{1}{5} = \frac{2}{5}$

$$\text{Fraction of total white area} = 1 - \frac{2}{5} = \frac{3}{5}$$

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

- $\frac{1}{5} + \frac{1}{5} = 20\% + 20\% = 30\%$  (error)

White area = 70%

Each white area = 35%

*! 30 with no % sign*

*Accept for 1m as evidence of a correct method*

$$! \frac{1.5}{5} \text{ or } 1\frac{1}{2}$$

*Accept for 1 as evidence of a correct method*

*(incorrect notation for  $\frac{3}{5} \div 2$ )*

**Do not accept** conceptual errors seen, eg:

- $\frac{1}{5} + \frac{1}{5} = \frac{2}{10}$

- $\frac{1}{5} + \frac{1}{5} = 5\% + 5\% = 10\%$

- $\frac{6}{10} \div 2 = \frac{3}{5}$

1

[2]

**2**

(a) C AND E

*Letters may be given in either order.*

1

(b) B

1

**[2]****3**

Gives a correct explanation that converts the given fractions to decimals **or** fractions with a common denominator / numerator **or** percentages, eg:

- $\frac{4}{7} = \frac{36}{63}$  but  $\frac{5}{9} = \frac{35}{63}$
- $0.57142... > 0.55555$
- Because there is a  $\frac{1}{63}$  difference between the two

*For  $\frac{4}{7}$  accept:*

- $0.57(...)$  **or**  $57(. \dots\%)$

*For  $\frac{5}{9}$  accept:*

- $0.56$  **or**  $0.55(...)$  **or**  $56(\%)$  **or**  $55(. \dots\%)$

*Accept minimally acceptable explanations, eg:*

- $\frac{36}{63}$   $\frac{35}{63}$

- $0.56$   $0.57$

**Do not accept** incomplete explanations that fail to convert both fractions to a common format, eg:

- $\frac{4}{7}$  is  $0.57$  so it is bigger

$9$ ths are smaller than  $7$ ths and there is only one more  $9$ th than  $7$ th so  $\frac{4}{7}$  is greater

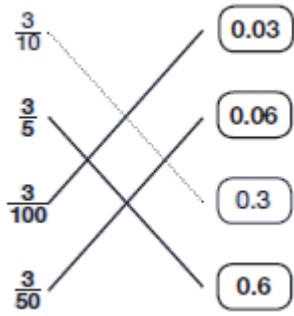
**! Condone method of conversion incorrectly expressed in an otherwise correct explanation, eg:**

- $\frac{4}{7} \times 9 = \frac{36}{63}$

**[1]**

4

Fractions connected correctly to decimals as shown:



[1]

5

(a)  $\frac{1}{20}$  or equivalent

*Accept equivalent fractions, decimals or percentages, eg:*

- 5%
- 0.05
- $\frac{5}{100}$

**Do not accept** 5 without a percentage sign

1

(b) 95

**Do not accept** equivalent fractions or decimals

1

[2]

6

Award **TWO** marks for a correct answer of 30

If the answer is incorrect, award **ONE** mark for evidence of appropriate working, eg:

- 10% of 200 = 20  
25% of 200 = 50  
50 – 20 = wrong answer

**OR**

- 25% – 10% = 15%  
15% of 200 = wrong answer

*Working must be carried through to reach an answer for the award of **ONE** mark.*

Up to 2m

[2]

**7** (a) 400

2

**or**

Shows or implies a complete correct method, eg:

- $30\% - 25\% = 5\%$

$$5\% = 20$$

$$100\% = 20 \times 20$$

1

(b) 111.6 **or** 112

**Do not accept 111**

1

**[3]**

**8** Award marks as shown below for values of  $n$  and  $p$  which meet the following criteria:

	$n:p$	
	2:3	3:2
$n$ is multiple of 5 <b>and</b> $p$ is multiple of 6	2 marks [A]	1 mark [C]
$n$ is multiple of 5 <b>or</b> $p$ is multiple of 6	1 mark [B]	0 marks

The following examples are worth 2 marks:

- $n = 20$  **and**  $p = 30$  [A]

- $n = 80$  **and**  $p = 120$  [A]

*! For 2m or 1m, accept multiple answers provided all meet the requirements for the mark(s) and are clearly distinguishable as separate answers, eg for 2 marks*

- $n = 20, 40, 60$

$$p = 30, 60, 90$$

2

**or**

The following examples are worth 1 mark:

- $n = 5$  and  $p = 7.5$  [B]
- $n = 10$  and  $p = 15$  [B]
- $n = 4$  and  $p = 6$  [B]
- $n = 90$  and  $p = 60$  [C]

**OR**

Shows or implies a method for rearranging  $\frac{n}{p} = \frac{2}{3}$   
which moves  $p$  from the denominator, eg:

- $3n = 2p$
- $n = \frac{2p}{3}$

**OR**

Shows or implies a complete correct method, eg:

- $2 \times 5 \times 6 : 3 \times 5 \times 6$   
*! For 1m, condone a list of at least five additional ratios or  
fractions equivalent to  $\frac{2}{3}$  with none incorrect*

1

[2]

9

$$\frac{5}{12}$$

[1]

10

- (a) Any two triangles in the shape shaded.  
*Accept alternative unambiguous indications.*

1

- (b) Any two more triangles in the shape shaded.  
*Accept alternative unambiguous indications.*

1

[2]

11

352

**Do not** accept 352%

[1]



12

Numbers in order, as shown:

0.098

0.607

0.78

4.003

5.6

[1]

13

35%

[1]

14

Award **TWO** marks for the correct answer of 29.25g.

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g:

- $6.5 \div 2 = 3.25$   
 $3 \times 6.5 = 20.5$  (error)  
 $3 \times 3.25 = 9.75$   
 $20.5 + 9.75$

OR

- $10p + 5p$  weigh  $6.5g + 3.25g = 9.75$   
 $3$  of each coin =  $9.75 \times 3$

*Answer need not be obtained for the award of **ONE** mark.*

Up to 2

[2]

15

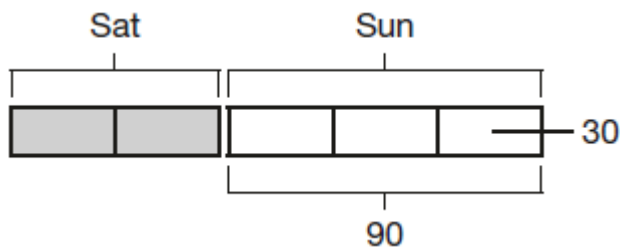
Award **TWO** marks for the correct answer of 150 pages.

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g:

- $\frac{3}{5} = 90$   
 $9 \div 3 = 30$   
 $30 \times 5$

OR

•



$$30 \times 5$$

*Answer need not be obtained for the award of **ONE** mark.*

Up to 2

[2]

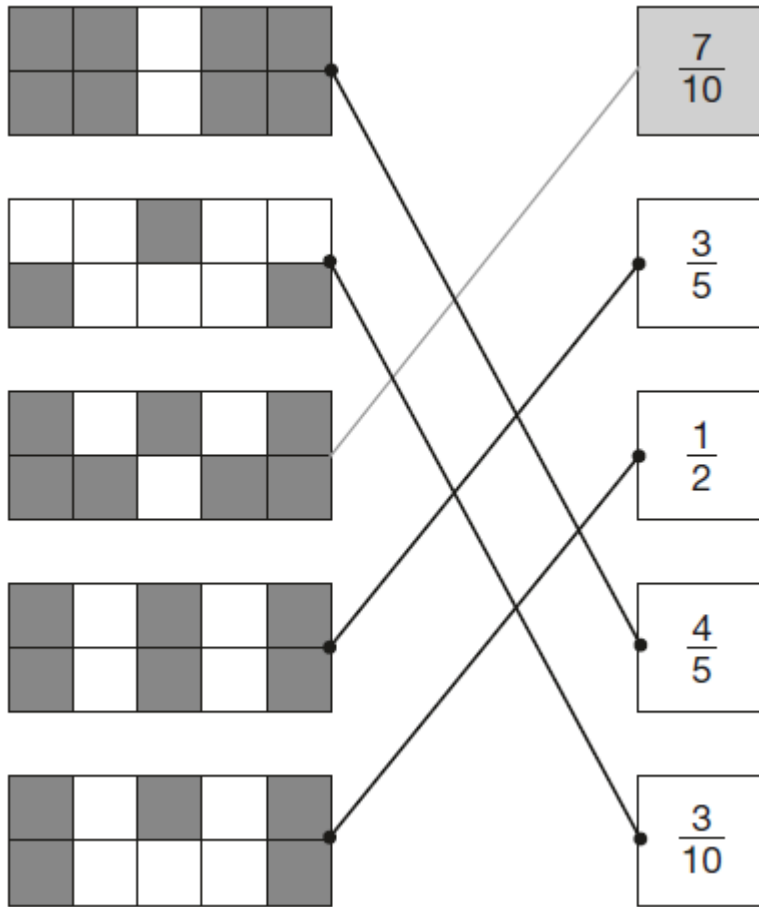
16

1.75

[1]

17

Award **TWO** marks for four shapes matched correctly as shown:



If the answer is incorrect, award **ONE** mark for three shapes matched correctly.

*Lines need not touch shapes or fraction boxes, provided the intention is clear.*

**Do not** credit any shape that has been matched to more than one fraction.

Up to 2

[2]

18

Award **TWO** marks for the correct answer of 119.

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g.

- $140 \div 20 = 7$   
 $3 \times 7 = 21$   
 $140 - 21$

OR

- $140 \div 20 = 7$   
 $20 - 3 = 17$   
 $17 \times 7$

*Answer need not be obtained for the award of **ONE** mark.*

Up to 2m

[2]

19

Numbers in order as shown:



[1]

20

Numbers circled as shown:

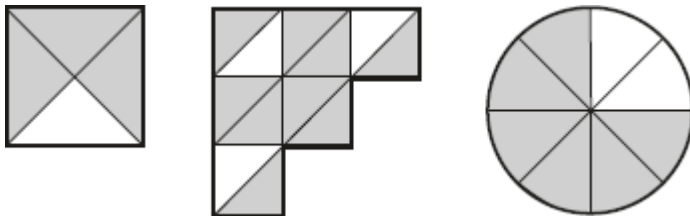


*Accept alternative unambiguous positive indications, e.g. numbers ticked or underlined.*

[1]

21

Award **TWO** marks for all three diagrams completed to show three-quarters shaded, e.g.



If the answer is incorrect, award **ONE** mark for two diagrams correct.

*Accept alternative unambiguous indications of parts shaded.*

Up to 2m

[2]

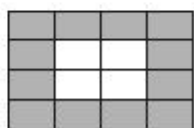
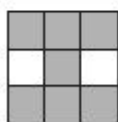
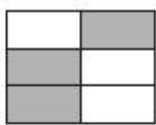
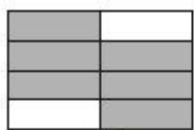
22

$$\frac{2}{3} = \frac{8}{12} = \frac{4}{6}$$

[2]

23

Both shapes ticked as shown:



Accept alternative unambiguous positive indications, e.g. shapes circled.

[1]

**24**

Award **TWO** marks for all four rows completed correctly as shown:

$1\frac{1}{2}$	1.2
----------------	-----

$1\frac{1}{4}$	1.3
----------------	-----

$1\frac{5}{100}$	1.4
------------------	-----

$1\frac{3}{5}$	1.5
----------------	-----

If the answer is incorrect, award **ONE** mark for three rows completed correctly.

*Accept alternative unambiguous positive indications of the correct numbers, e.g numbers ticked.*

Up to 2m

[2]

**25**

75

[1]

**26**

Award **TWO** marks for the correct answer of  $\frac{7}{12}$

*Accept equivalent fractions or an **exact** decimal equivalent, e.g.*  
 $0.5\overline{3}\overline{8}$

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g.

- $\frac{1}{4} + \frac{1}{6} =$   
 $\frac{3}{12} + \frac{2}{12} = \frac{5}{12}$   
 $1 - \frac{5}{12}$

OR

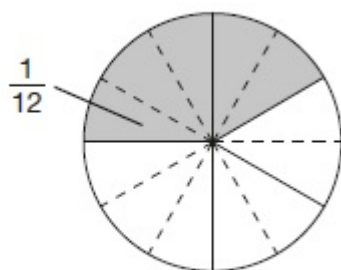
- $\frac{1}{4} + \frac{1}{6} + \frac{1}{6}$

OR

- $1 - \frac{1}{4} - \frac{1}{6}$

OR

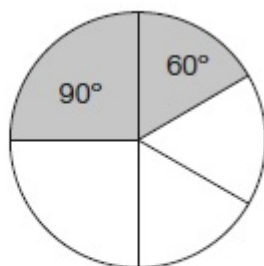
- 



$$\frac{3}{12} + \frac{4}{12}$$

OR

- 



$$90^\circ + 60^\circ = 150^\circ$$

$$1 - \frac{150}{360}$$

Accept for **ONE** mark an answer between 0.58 and 0.59 inclusive.

Answer need not be obtained for the award of **ONE** mark.

Up to 2m

[2]

**27**

An explanation showing that 0.25 is less than  $\frac{2}{5}$ , e.g.

- $\frac{2}{5}$  is  $0.4 > 0.25$
- 0.25 is  $\frac{5}{20} < \frac{8}{20}$
- 0.25 is 25% and  $\frac{2}{5}$  is 40% and 25% is smaller than 40%
- 0.25 is a quarter.

You need 8 quarters to make 2, but only 5 lots of  $\frac{2}{5}$  to make 2

- $\frac{2}{5} = 0.4$
- $\frac{1}{4}$  is  $\frac{1}{4}$  smaller than a half, but  $\frac{2}{5}$  is only  $\frac{1}{10}$  smaller,  
so  $\frac{1}{4}$  is smaller than  $\frac{2}{5}$

**Do not** accept vague, incomplete or incorrect explanations, e.g.

- Because  $\frac{1}{4}$  is bigger than  $\frac{2}{5}$
- Because  $\frac{1}{4}$  comes first on a number line
- Because 0.25 is  $\frac{1}{4}$

Accept  $\frac{2.5}{10}$  as an equivalent to  $\frac{1}{4}$  in an explanation when  
comparing to  $\frac{4}{10}$

[1]