Level E

Your score / 102 = %

Class average %

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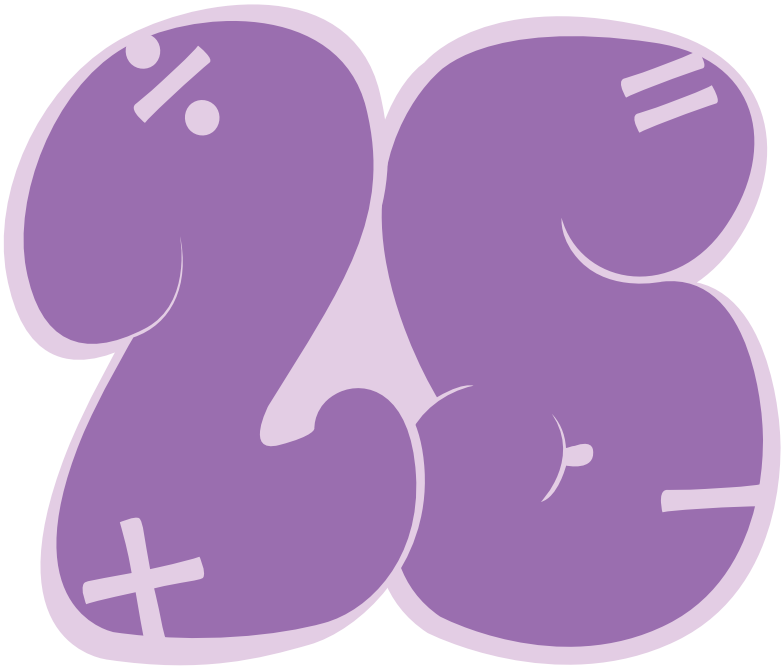
ENGLAND

SEM Series of Educational Maths

Maths

WEEK 25



TwentyFive

NAME

DATE / /

25

Ratio and Proportion

Ratio and proportion are used to compare one amount with another. A ratio shows the relationship between two amounts but proportion is a part or share of a whole. So ratio is part to part and proportion is part to a whole.

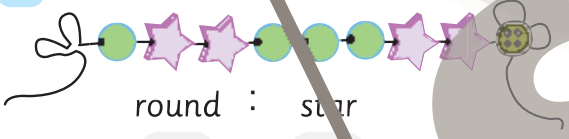
Look at the animals. If there are 1 cat and 4 dogs you could write the ratios and proportions as follows:

Ratio cat : dog = 1 : 4

Proportion cat : dog = $\frac{1}{5} : \frac{4}{5}$

Two different kinds of beads are strung on each string. Write the ratio of round bead to star bead. Remember the numbers of beads vary in each question.

a



round : star

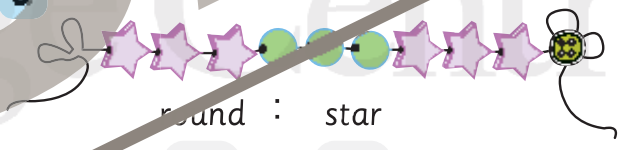
b

round : star

c

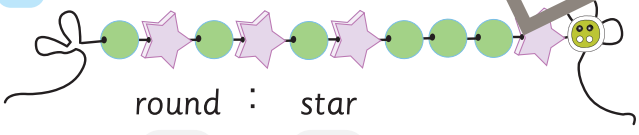
round : star

d



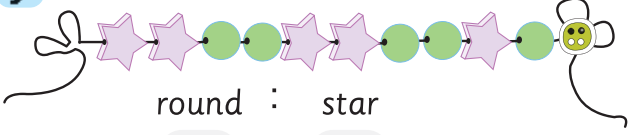
round : star

e



round : star

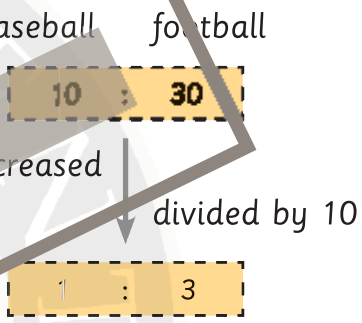
f



round : star

Sometimes you need to deal with larger numbers. Two quantities are in direct proportion when they increase or decrease in the same ratio.

The ratio of baseball to football is 10 to 30. You can simplify both numbers by dividing by the highest common factors. Then it can be written 1:3.

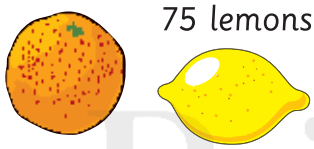


These two different items are put together in one box. After simplifying the numbers, write down the ratio for each question.

a

25 oranges

75 lemons



:

b

42 potatoes

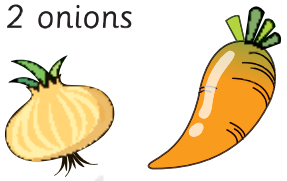
36 corns

:

c

12 onions

72 carrots

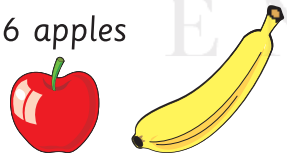


:

d

56 apples

14 bananas



:

e

16 peaches

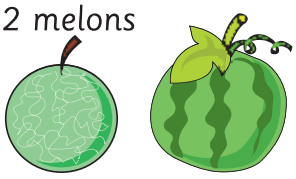
80 pears

:

f

52 melons

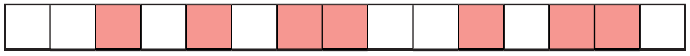
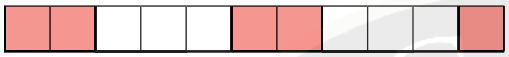
13 watermelons



:

/ 6

Write the ratio of white to shaded squares for each strip.
Give your answer in its simplest form.

		white		shaded
a			:	
b			:	
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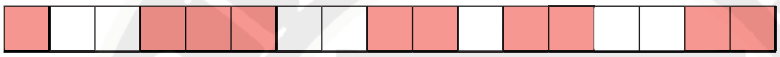
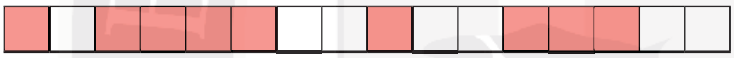
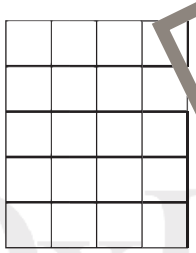
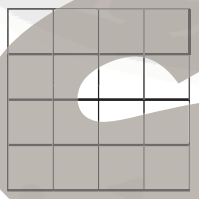
d			:	
e			:	
f			:	

Shade the grid to match each ratio.

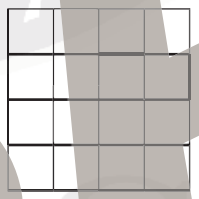
a white shade 1 : 3



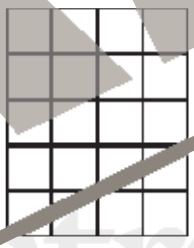
b white shade 1 : 7



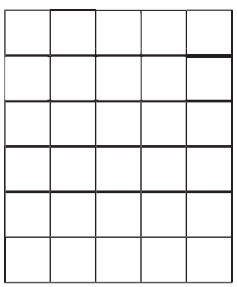
c white shade 3 : 5



d white shade 7 : 3

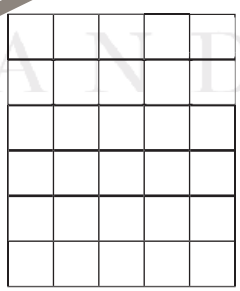


e white shade 1 : 2

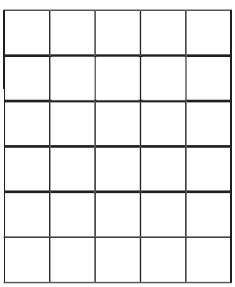


f white shade 2 : 3

g white shade 7 : 8



h white shade 1 : 5



/ 14

Find the proportion for each weather type using the number of days given.
*(Remember there are 30 days in April). Write your answers as fractions.

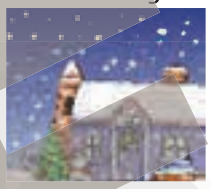
sunny

20 days

raining

3 days

snowy

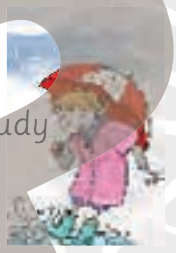


2 days

lightning

1 day

cloudy

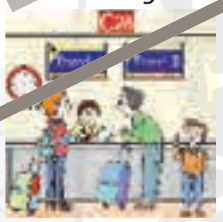


4 days

school

15 days

holiday



6 days

weekend

8 days

Each child receives their monthly pocket money as below. Each of them saves some of the money and spends the rest. Find out the proportion they have saved and the proportion they have spent. Write your answer as a fraction.

£68.00

£4.00

save

spend

£12.50

£2.50

save

spend

£84.00

£14.00

save

spend

£91.00

£13.00

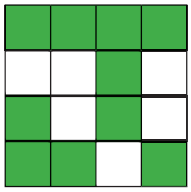
save

spend

/ 12

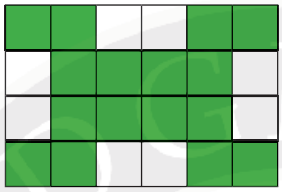
Write the proportion of the grey grids in the first answer box. Then write the proportion of the white grids in the second answer box. (The two proportions should add up to 1.) The first one has been done for you.

a

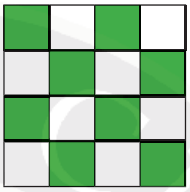


$\frac{10}{16} = \frac{5}{8}$ $\frac{6}{16} = \frac{3}{8}$

b



c



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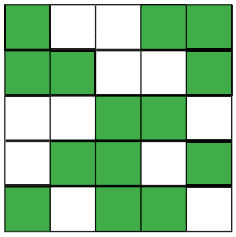
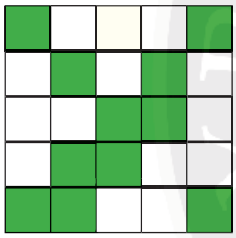
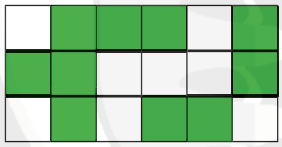


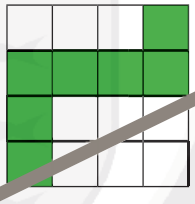
e



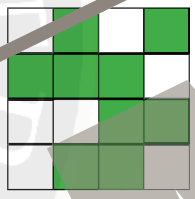
f



g



h



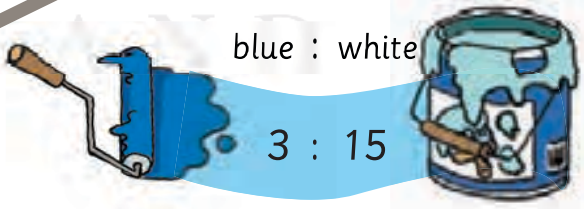
Suzie makes a new colour of paints by adding white paint with a different proportion of mixture as below. Find out the proportion of white in the new colour of paint.

red : white

yellow : white

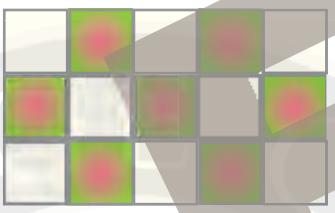
green : white

blue : white



/ 11

Kathy designs her bathroom tiles as below. She needs 15 tiles for the basic set. The ratio of white to patterned tiles is 8 : 7. She needs to estimate the cost of the tiles when she buys a different total number of tiles in each question. Write down how many white tiles and how many patterned tiles she will buy if she sticks to the ratio.



a

white patterned

b

white patterned

c

white patterned

d

white patterned

e

white patterned

f

white patterned

g

white patterned

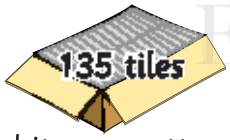
h

white patterned

i

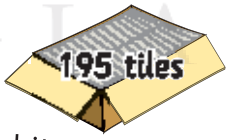
white patterned

g



white patterned

h



white patterned

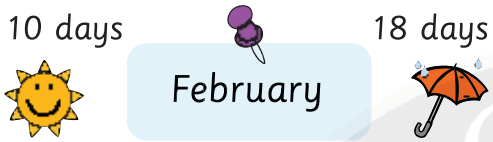
i

white patterned

/ 12

Write the ratio of dry to wet days in each month. What is the proportion of dry days in each month? Simplify both numbers in ratio and fraction by dividing with the highest common factor. The first question has been done for you.

a



10 : 18
5 : 9
5/14

b

:

c

:

d

:

e

:

f

:

Look at the different coloured balls below. Complete the sentences with the correct numbers.

a 6 in every balls is grey.

b There are grey balls to every 3 white balls.

c 1 in every balls is white.

d There are grey balls to every white ball.

/ 14

Zoe makes a necklace with star beads. The pattern of the stars is as follows: G stands for green, R stands for red and B stands for brown. Answer the questions below.

a What proportion of the stars is red?

b What proportion of the stars is green?

c What proportion of the stars is brown?

d If there are 8 green stars, how many brown stars would there be?

e If there are 12 red stars, how many brown stars would there be?

f If there are 24 stars altogether, how many green stars would there be?

g If there are 4 brown stars, how many stars would there be?

h If there is 1 brown star, how many stars would there be?

i If there are 2 green stars, how many stars would there be?

j If there are 48 stars altogether, how many red stars would there be?

/ 10

Problem Solving

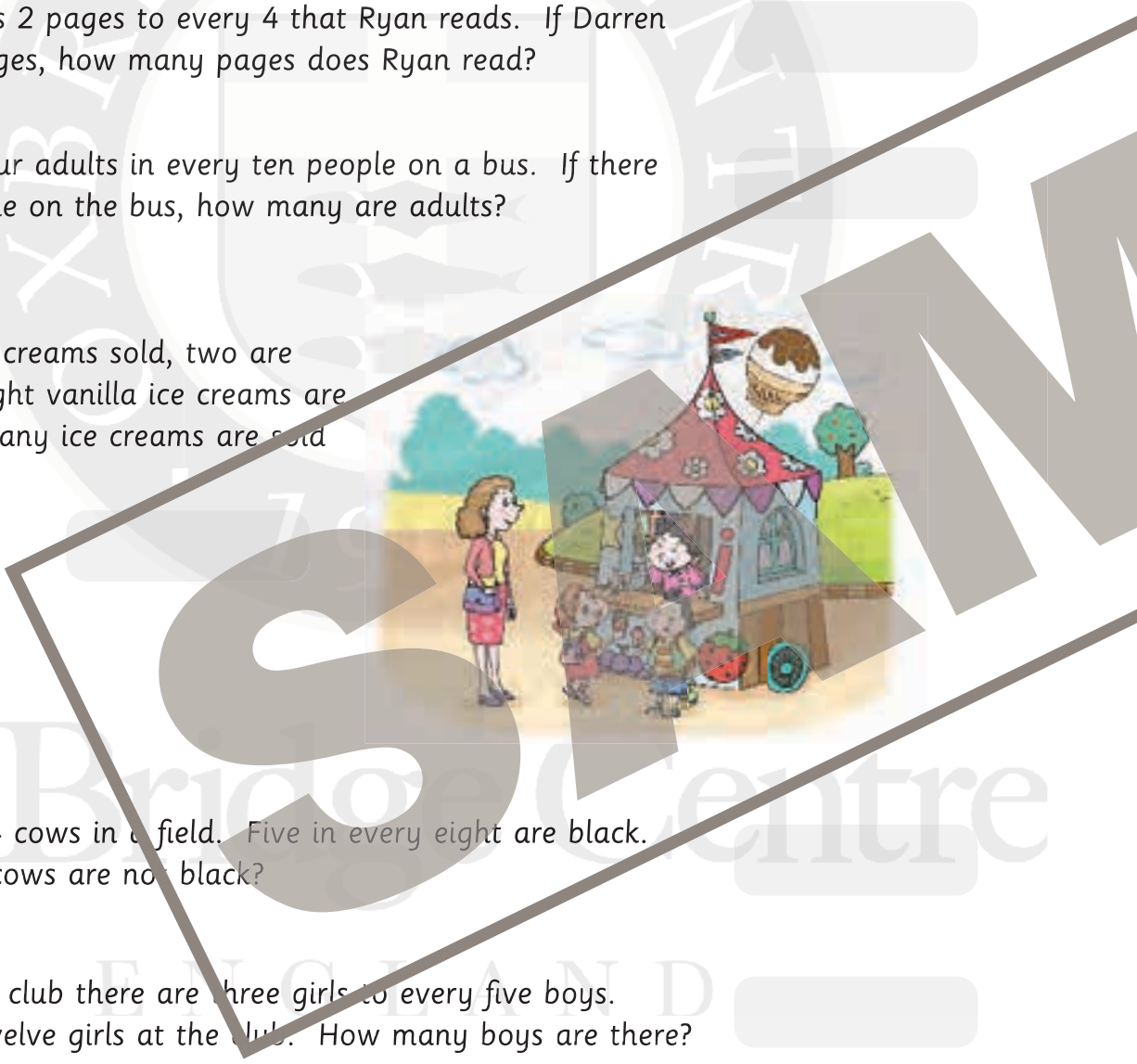
a There are 2 girls to every 4 boys in a class. What is the ratio of girls to boys?

b Pamela has 3 stickers for every 1 Lisa has. If Pamela has 9 stickers, how many stickers does Lisa have?

c Darren reads 2 pages to every 4 that Ryan reads. If Darren reads 10 pages, how many pages does Ryan read?

d There are four adults in every ten people on a bus. If there are 40 people on the bus, how many are adults?

e Out of 6 ice creams sold, two are vanilla. If eight vanilla ice creams are sold, how many ice creams are sold altogether?



f There are 24 cows in a field. Five in every eight are black. How many cows are not black?

g At the chess club there are three girls to every five boys. There are twelve girls at the club. How many boys are there?

h Two in every five pencils are blunt. 15 pencils do not need sharpening. How many pencils are there?

/ 8

i Daniel mixes 1 litre of white paint with every 4 litres of green paint. He needs 20 litres of paint altogether. How many litres of green paint will he need?

j Kyle had 9 correct answers in every 10 questions in his maths test. If he had 2 wrong answers, how many questions were there?

k A tennis player won three matches to every one she lost. If she played 20 matches, how many did she lose?

l Olive shares out 16 sweets. She gives Jane 1 sweet for every 3 she takes. How many sweets does Jane get?

m Three boys to every four girls are in the swimming pool. How many children are there in the pool if there are nine boys?

n Two toy cars cost £2.50 in total. What is the cost of ten cars?

o Paul plants three different colours of tulips in his garden. For every one yellow, he planted three pinks and four reds. He plants 120 flowers altogether. How many red tulips does he plant?

p Cathy won 2 prizes in every 48 tickets in a lucky dip. If she wins 8 prizes how many tickets are there in the lucky dip?

q Sonya pours 100ml of orange juice, 100ml of cranberry juice and 50ml of water altogether into a jug for a party. If she made 1750ml in total, how many ml of water did she pour into the container?

/ 9

12

SPEED TEST

My time is

My score is /20

1	8 x 6	=	11	35 + 48	=
2	12 x 5	=	12	56 ÷ 7	=
3	81 ÷ 9	=	13	45 + 18	=
4	64 ÷ 8	=	14	39 x 2	=
5	56 x 2	=	15	91 – 16	=
6	14 x 3	=	16	55 + 18	=
7	57 + 25	=	17	66 – 12	=
8	70 – 12	=	18	5 x 13	=
9	11 x 11	=	19	100 – 25	=
10	84 – 25	=	20	12 x 6	=

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