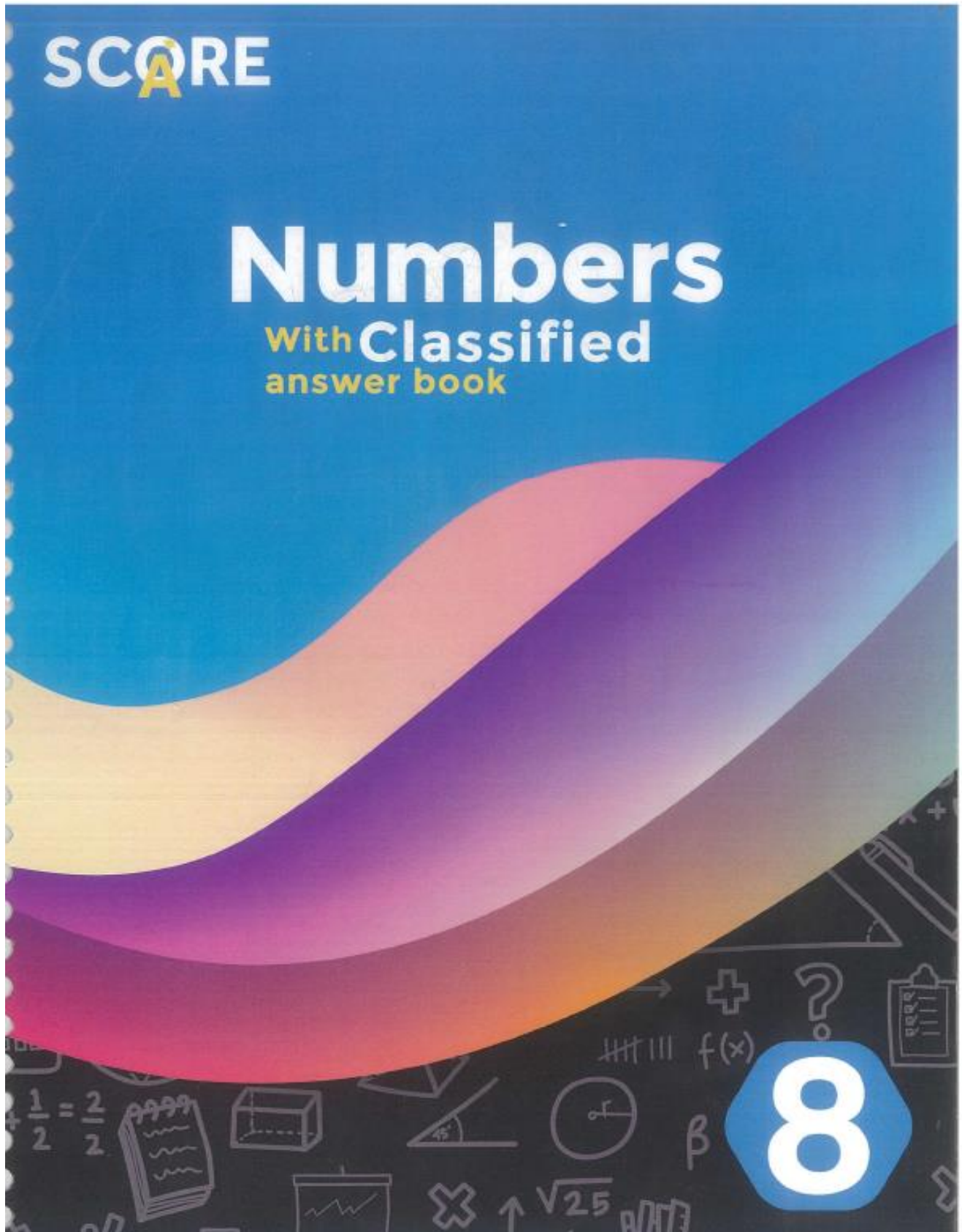


Classified – Ratio & Equivalent Ratio

P. 109 to p. 124



## 19- Ratio

1. Write each ratio in its simplest

form. a) 15 : 5

d) 42 : 49

b) 9 : 6

e) 32 : 16

c) 25 : 100

f) 27 : 45 : 18

2. Simplify the

ratios. a) £1 : 20p

b) 1.5 m : 450 cm

c) 3 kg : 3600 g

d) 1 hour : 18 minutes

e) 2 m : 130 cm : 10 mm

f) 32 cm : 16 cm

g) 25 kg : 100 kg

h) 0.3 : 0.5

i) 6x : 12x

j) 2.4 m : 45 cm

3. There are 28 red pens and 84 black pens in a bag.

Write down the ratio of the number of red pens to the number of black pens.

Give your ratio in its simplest form.

4. The ratio of circles to squares is 4 : 7

a) What fraction of the shapes are circles?

b) What fraction of the shapes are squares?

5.  $\frac{4}{9}$  of a group of people prefer tea to coffee.

What is the ratio of people who prefer tea to people who prefer coffee?

6. There are only black pens and green pens in a box.

The ratio of the number of black pens in the box to the number of green pens in the box is 2 : 5

What fraction of the pens are black?

7. Class 8A voted for their favourite sport.

$\frac{17}{30}$  of the class voted for football.

$\frac{1}{5}$  of the class voted for netball.

The rest voted for other.

a) What fraction of the class voted for other?

b) Write the ratio of football : netball : other.

c) Write the ratio of netball : other in its simplest form.

8. There are 35 pens in a box.

15 of the pens are green.

The rest of the pens are red.

Write down the ratio of the number of green pens to the number of red pens.

Give your ratio in its simplest form.

9. A drink is mixed in the ratio

lemonade : orange : cranberry = 6 : 3 : 2

What fraction is orange?

Circle your answer.

$$\frac{3}{8}$$

$$\frac{2}{11}$$

$$\frac{3}{11}$$

$$\frac{6}{11}$$

10. Here are some ratios.

A  
9 mm : 1.5 cm

B  
60 cm : 1 m

C  
800 g : 1.2 kg

D  
150 m : 0.25 km

Write each ratio in the correct position in the table. One has been done for you.

Ratios equivalent to 2 : 3	Ratios equivalent to 3 : 5
	A

In a village

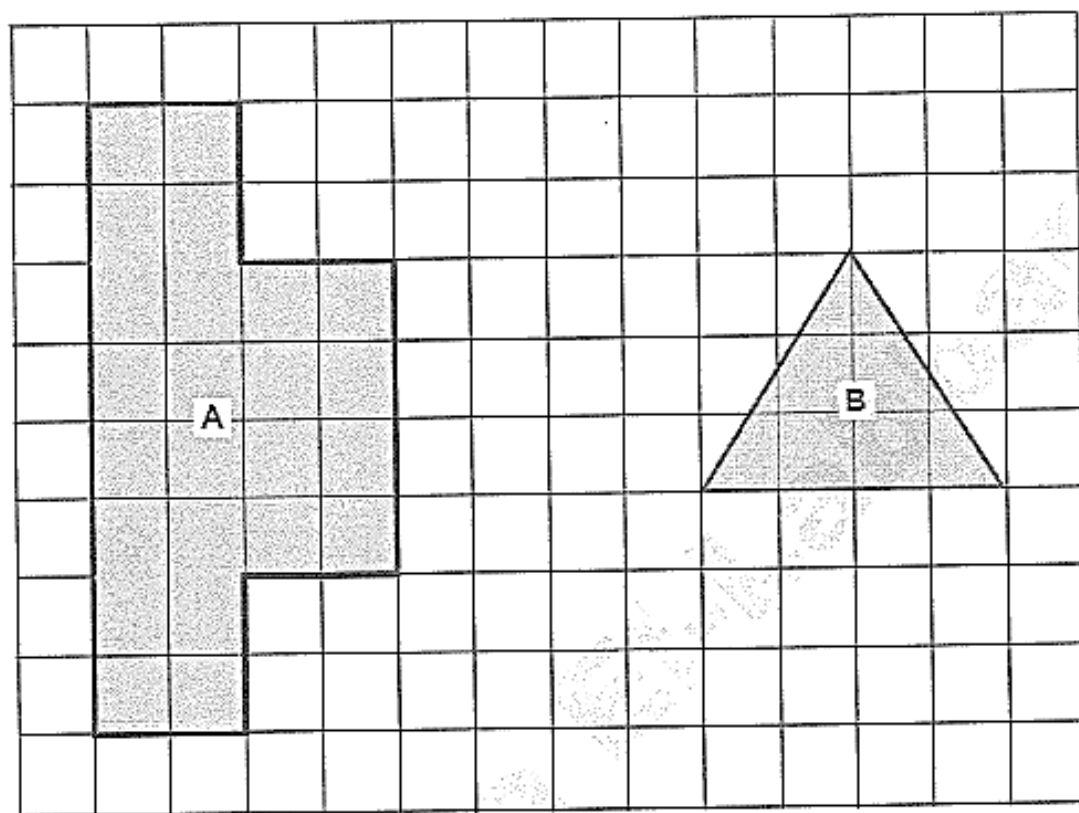
the number of houses and the number of flats are in the ratio 7 : 4 the number of flats and the number of bungalows are in the ratio 8 : 5

There are 50 bungalows in the village.

How many houses are there in the village?

11. Work out

area of shape A : area of shape B



Give your answer in its simplest form.

## 20- Equivalent Ratio

1. Write the ratios in the form 1 : n.

a) 5 : 15

d) 2 : 9

b) 3 : 9

e) 4 : 9

c) 12 : 30

2. There are 72 red cars and 96 blue cars in a car park.

Jack wants to take a sample of the cars and keep the ratio of red to blue cars the same.

He only wants 18 red cars.

How many blue cars will Jack need?

3. Two numbers are in the ratio 3 : 4. One of the numbers is 12.

Show that the two possible values for the other number are 16 and 9.

4. Ken and Susan share £20 in the ratio 1 : 3

Work out how much money each person gets.

Ken £ .....

Susan £ .....

5. Two numbers are in the ratio 6 : 5. One of the numbers is 0.03.

Work out the two possible values for the other number.

6. The ratio of the number of boys to the number of girls in a school is 4:5

There are 95 girls in the school.

Work out the total number of students in the school.

7. Yuri has a box containing white, milk and plain chocolates in the ratio

white : milk : plain  
12 : 7 : 2

There are more than 50 chocolates in the box.

Find the smallest possible number of milk chocolates in the box.

8. A teacher orders pencils and rulers in the ratio 3 : 5

a) One week, the teacher orders 240 pencils. How many rulers does she order?

b) The week after, the teacher orders 240 rulers. How many pencils does she order?



9. The angles in a triangle are in the ratio 1 : 1 : 4  
a) What type of triangle is it? How do you know?

b) What is the size of the largest angle in the triangle?

10. The angles in a triangle are in the ratio 1 : 2 : 3.

Neil says

This is a right-angled triangle. Is Neil correct? Show your reasoning.

11. The mean of four numbers is 16  
The numbers are in the ratio 1 : 7 : 3 : 5  
Work out the range of the numbers.  
Show your workings.

12. Melissa is 13 years old.

Becky is 12 years old.

Daniel is 10 years old.

Melissa, Becky and Daniel share £28 in the ratio of their ages.

Becky gives a third of her share to her mother.

How much should Becky now have?

13. Amy, Beth and Colin share 36 sweets in the ratio 2 : 3 : 4

Work out the number of sweets that each of them receives.

Amy.....sweets

Beth.....sweets

Colin.....sweets

14. A shop sells CDs and DVDs.

In one week the number of CDs sold and the number of DVDs sold were in the ratio 3:5

The total number of CDs and DVDs sold in the week was 728

Work out the number of CDs sold.

15. The ratio of girls to boys in a school is 2 : 3

(a) What fraction of these students are boys?

In Year 8 the ratio of girls to boys is 1 : 3

There are 300 students in Year 8.

(b) Work out the number of girls in Year 8.

16. Pat and Julie share some money in the ratio 2 : 5

Julie gets £45 more than Pat.

How much money did Pat get?

17. (a) There are 32 students in a class.

All the students are either left-handed or right-handed.  
The ratio of the number of left-handed students to the number of right-handed students is 1 : 7

Work out the number of right-handed students.

b) Work out the length of Chitra's model lorry.

18. The length of an Airbus A300 aeroplane is 54 m.

The ratio of the length of this aeroplane to its wingspan is 6 : 5

Work out the wingspan of the aeroplane.

19. The scale of a map is 1 : 25 000

On the map, the distance between two railway stations is 22 cm.  
Work out the real distance between the two railway stations.  
Give your answer in kilometres.

20. Zosia and Abie share some money in the ratio 4 : 5.

Abie gets \$15 more than Zosia.

- What is the total amount of money that they share?
- How much money do they each get?

21. The sides of a quadrilateral are in the ratio 2 : 3 : 5 : 8. The difference between the shortest side and the longest side is 7.5 cm.  
Work out the perimeter of the quadrilateral.

22. Frank, Mary and Seth shared some sweets in the ratio 4 : 5 : 7

Seth got 18 more sweets than Frank.

Work out the total number of sweets they shared.

23. At a school

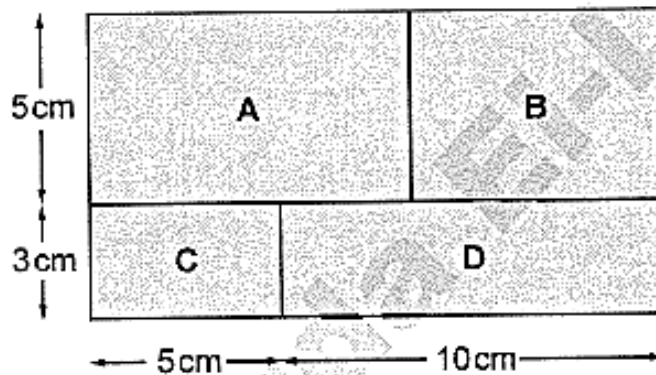
number of boys : number of girls = 9 : 7

There are 116 more boys than girls.

Work out the total number of students at the school.

24. The diagram shows a shaded rectangle.

It is divided into four smaller rectangles, labelled A, B, C and D.



Not drawn accurately

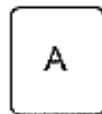
The ratio of area C to area B is 1 : 2

Calculate area A.

25. A word game has tiles with letters on. Some letters are more common than others.

(a) There are 100 tiles in the English version of the game.

Here is information about how many tiles show the letter A, E or O.



9 tiles



12 tiles



8 tiles

I am going to take one of the 100 tiles at random.

What is the probability that it will show one of the letters A, E or O?

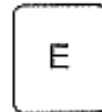
(b) There are 104 tiles in the Russian version of the game.

The ratio of tiles showing A, E or O is 4 : 4 : 5

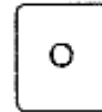
Work out how many of the 104 tiles show the letters A, E or O.



\_\_\_\_\_ tiles



\_\_\_\_\_ tiles



\_\_\_\_\_ tiles

26. A dessert has both fruit and yoghurt inside.

**Altogether**, the mass of the fruit and yoghurt is **175g**.

The **ratio** of the mass of fruit to the mass of yoghurt is **2 : 5**

What is the mass of the yoghurt?



27. A town in the south of England has the lowest ratio of men to women in England.

There were only 87 men for every 100 women.

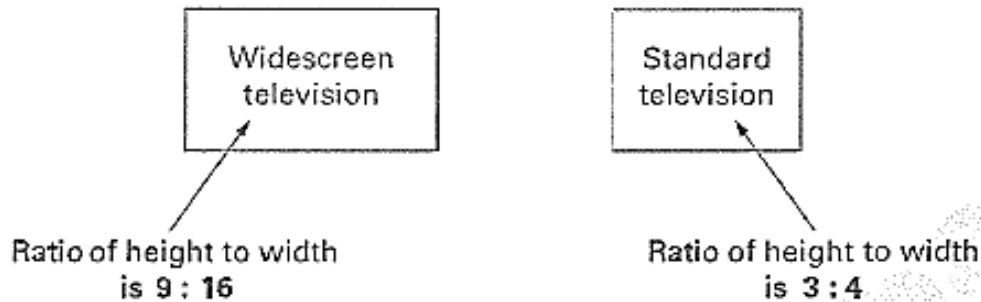
**For every 100 men**, how many women were there?

Give your answer to the nearest integer.

Men	Women
87	100

Men	Women
100	_____

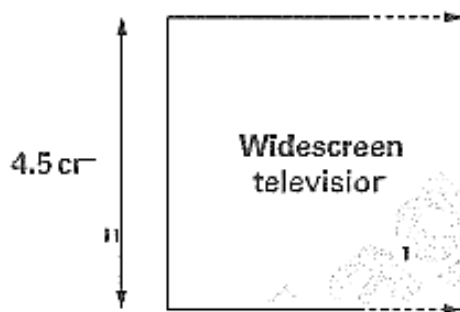
28. The screens of widescreen and standard televisions look different. They have different proportions.



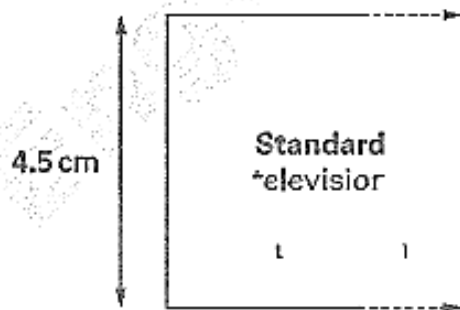
Keri starts to draw scale drawings of the televisions.

For each, the height is 4.5 cm.

What should the width of each scale drawing be?



The width of this scale drawing should be..... cm



The width of this scale drawing should be..... cm



29. Work out the number of boys and girls in each class below.

(a) In class 8M, there are 27 pupils.

There are twice as many boys as girls.

Number of boys	Number of girls
.....	.....

(b) In class 8K, there are 28 pupils.

There are two more boys than girls.

Number of boys	Number of girls
.....	.....

(c) In class 8T, there are 9 boys.

The ratio of boys to girls is 1 : 2

Number of boys	Number of girls
.....	.....