

## Ratio H Assessment

## THE ANSWERS

### Higher Level



*All questions*

Clip	Grade	Title of clip	Question(s)	Marked out of	Score	%
38.....	2.....	Introduction to Ratio .....	1 - 2	10	_____	_____
39.....	2.....	Using Ratio for Recipe Questions .....	3 - 4	7	_____	_____
40.....	2.....	Introduction to Percentages .....	5	6	_____	_____
41.....	2.....	Value for Money .....	6 - 7	6	_____	_____
42.....	2.....	Introduction to Proportion .....	8 - 10	8	_____	_____
105.....	3.....	Exchanging Money .....	11	5	_____	_____
106.....	3.....	Sharing using Ratio .....	12 - 14	10	_____	_____
107.....	3.....	Ratios, Fractions and Graphs.....	15 - 16	8	_____	_____
108.....	3.....	Increase/Decrease by a Percentage .....	17 - 18	5	_____	_____
109.....	3.....	Percentage Change.....	19 - 20	7	_____	_____
110.....	3.....	Reverse Percentage Problems .....	21 - 22	6	_____	_____
111.....	3.....	Simple Interest.....	23 - 24	5	_____	_____
142.....	4.....	Compound Units .....	25 - 26	9	_____	_____
143.....	4.....	Distance-Time Graphs.....	27	5	_____	_____
144.....	4.....	Similar Shapes .....	28 - 29	7	_____	_____
164.....	5.....	Compound Interest and Depreciation .....	30 - 31	6	_____	_____
199.....	7.....	Direct and Inverse Proportion .....	32 - 34	10	_____	_____

*Out of 120*      TOTAL SCORE \_\_\_\_\_

Final Percentage    %

- 1) Write the following ratios in their simplest form

a)  $3 : 24$

1 : 8 1

c)  $8 : 12 : 10$

4 : 6 : 5 2

b)  $6 : 20$

3 : 10 1

d)  $18 : 6 : 54$

3 : 1 : 9 2

- 2) The scale on a map is  $1 : 10\,000$

- a) Parnby is 17 cm from Houth on the map.  
How many km is Parnby from Houth?

1.7 km 2

- b) If Houth is 11.5 km from Kikby, how many cm apart will they be on the map?

115 cm 2

- 3) Here are the ingredients needed to make 10 flapjacks.

100 g Oats
80 g Butter
50 ml Syrup
54 g Sugar

Work out the amount of each ingredient needed to make 25 flapjacks.

<u>250</u> g Oats
<u>200</u> g Butter
<u>125</u> ml Syrup
<u>135</u> g Sugar

4

- 4) 225 g of butter are needed to make 18 mince pies.

Anais has 475 g of butter.

Does she have enough butter to make 40 of these mince pies?

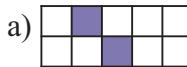
You must show all your working.

$225 \div 18 = 12.5$  g per mince pie

$40 \times 12.5 = 500$  g needed

Anais hasn't got enough butter for 40 mince pies.

- 5) What percentage of these grids are shaded?



20 % 1



70 % 2



45 % 1



40 % 2

- 6) A pack of 4 pens costs £1.60  
A pack of 6 pens costs £1.80

Which pack is the best value for money?  
You must show all your working.

$1.60 \div 4 = 40$ p

$1.80 \div 6 = 30$ p

Pack of 6 pens at £1.80 is better value.

3

- 7) A 3 kg bag of potatoes costs £2.79  
A 5 kg bag of potatoes costs £4.85

Which is the best value for money?  
You must show all your working.

$2.79 \div 3 = 93$ p

$4.85 \div 5 = 97$ p

Bag of 3 kg at £2.79 is better value.

3

- 8) Brian made 8 pancakes with 160 g of flour.

- a) How many pancakes can he make with 320 g of flour?

16

1

- b) How many pancakes can he make with 200 g of flour?

10

2

- 9) If 6 mangoes cost £7.50, how much would 10 of them cost?

£12.50

2

- 10) 3 people can build a wall in 4 hours.

How long would it take 2 people to build the same wall?

6 hrs

3

3

- 11) Emma is travelling to Munich.  
She changes £450 into Euros (€).  
The exchange rate is £1 = €1.37

a) Work out how many € Emma gets.

$$\text{€ } \underline{\underline{616.50}}$$

2

On her return home, Emma still has €152  
She wants to change them back to £  
The exchange rate is now £1 = €1.33

b) Work out how many £ she would get.

$$\text{£ } \underline{\underline{114.29}}$$

3

- 12) Bill, Tim and Rose share £120 between them in the ratio 2 : 1 : 3  
How much should each of them receive?

$$\text{Bill } \underline{\underline{\text{£40}}}$$

$$\text{Tim } \underline{\underline{\text{£20}}}$$

$$\text{Rose } \underline{\underline{\text{£60}}}$$

3

- 13) Yasmin and Ibrahim buy a present for their dad, sharing the cost in the ratio 6 : 5  
Ibrahim pays £15  
How much did the present cost?

$$\text{£ } \underline{\underline{33}}$$

3

- 14) To obtain the desired colour for his project, Rick is mixing red paint with yellow paint in the ratio 5 : 3  
A litre of red paint costs £4.99 and a litre of yellow paint costs £7.99  
If Rick needs 40 litres of his desired colour, how much will it cost him?

$$\text{£ } \underline{\underline{244.60}}$$

4

- 15) In a class, the ratio of boys to girls is 3 : 2

a) What fraction of the class are boys?

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

1

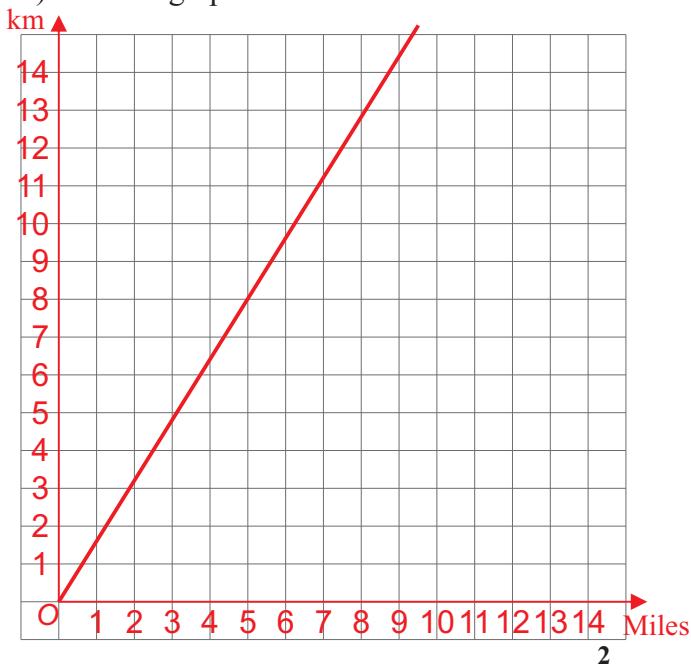
b) What fraction of the class are girls?

$$\underline{\underline{\frac{2}{5}}}$$

1

- 16) Miles and km are in the ratio 5 : 8

a) Draw a graph to illustrate this.



2

b) Use your graph to convert 12 km to miles.

$$\underline{\underline{7.5}} \text{ miles}$$

1

Carol is on a 1200 km journey by car.

She has already travelled 300 miles.

c) Work out how many km she has left.

$$\underline{\underline{720}} \text{ km}$$

3

- 17) A television is sold at £799 + VAT.  
VAT is at 20%.  
What is the total cost of the television?

£ 958.80

- 18) Tiles cost £1.65 each.  
*Tiles4u* offers “30% off when you spend over £200”.  
How much will it cost to buy 150 tiles?

£ 173.25

- 19) A plane increases its cruising speed from 400 mph to 550 mph.  
Work out the percentage speed increase.

37.5 %

- 20) Harry made 75 mince pies for the school fair.  
He sold 80% of those at 80p each and the remaining 20% at “3 for £2.00”  
The 75 mince pies cost him £35 to make.  
Work out his percentage profit (to 1 d.p.).

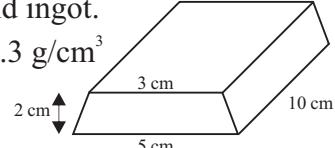
4.5 %

- 23) Fran has £350 in her savings account.  
3% simple interest is paid each year.  
How much interest will she earn in 5 years?

£ 52.50

- 24) Ellie invested £900 in the bank for 4 years.  
She earned £162 simple interest.  
What was the simple interest rate per annum?

- 25) The diagram shows a gold ingot.  
The density of gold is  $19.3 \text{ g/cm}^3$



Calculate the mass of the ingot in kg.

- 21) In a sale, prices are reduced by 12%.  
Hani bought a pair of boots for the sale price of £61.60  
What was the original price of the boots?

65.7 %

- 26) a) A motorcycle travels 90 km in  $1\frac{1}{2}$  hours.

Work out its average speed in km/h.

1.544 kg

- b) A car travels at an average speed of 50 mph for 30 mins and then 70 mph for 2 hours.  
Work out the average speed of the car (mph) over the whole journey.

60 km/h

- 22) Jane was paid £154 this week.  
This is a 10% increase from last week.  
How much was she paid last week?

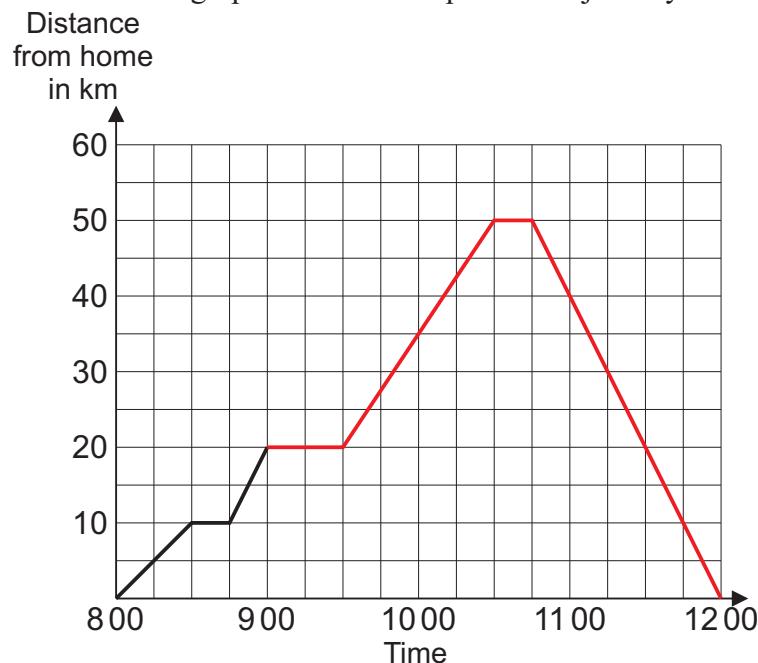
£ 70

66 mph

£ 140

- 27) Phil sets off from home on a bike ride.

The graph below shows part of his journey.



- a) Work out Phil's average speed between 8 am and 9 am.

$$\underline{20} \text{ km/h}$$

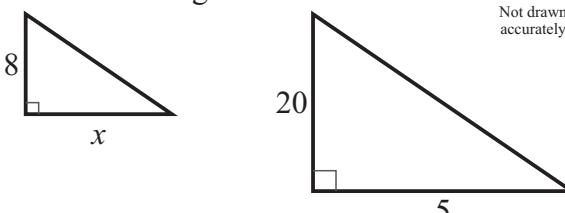
1

At 9 am, Phil stops for a 30 mins break. He then cycles a further 30 km away from home in 1 hr. After another 15 mins break, he finally cycles back home at an average speed of 40 km/h.

- b) Complete the distance/time graph.

4

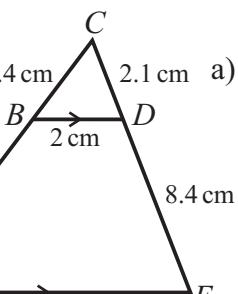
- 28) These two triangles are similar.



Work out the value of  $x$ .

$$x = \underline{2}$$

2

- 29) 

- a) Work out the length  $AE$ .

$$\underline{10} \text{ cm}$$

2

- b) Work out the perimeter of trapezium  $ABDE$ .

$$\underline{30} \text{ cm}$$

3

- 30) Eve invests £3 000 at 3.6% compound interest per annum.

Work out the value of the investment after 5 years.

$$\underline{\text{£3580.31}}$$

3

- 31) A £55 000 car depreciates at the rate of 18% each year.

How much would it be worth after 10 years?

$$\underline{\text{£7559.64}}$$

3

- 32)  $y$  is directly proportional to  $x$ .

When  $x = 70$ ,  $y = 10$

- a) Find a formula for  $y$  in terms of  $x$ .

$$\underline{y = \frac{1}{7}x}$$

3

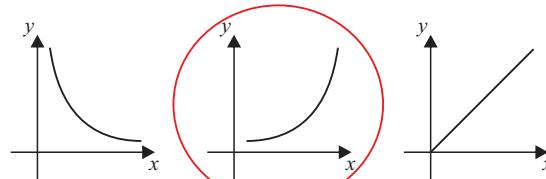
- b) Calculate the value of  $y$  when  $x = 245$ .

$$\underline{35}$$

1

- 33) Circle the graph matching this statement:

" $y$  is proportional to the square of  $x$ "



1

- 34)  $y$  is inversely proportional to  $x^2$ .

When  $x = 4$ ,  $y = 10$

Work out the value of  $y$  when  $x = 10$

$$\underline{1.6}$$

5