5.1 Reasoning: Ratio and Proportion: Test Pack

STA KS2 National Curriculum Mathematics - STA Reasoning Test Framework · Calculators not allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Circle the ratio that is equivalent to 3:5.

- [ ] A) 6:15
- [ ] B) 9:15
- [ ] C) 12:15
- [ ] D) 15:20

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2 The diagram shows a grid of 20 squares (4 rows of 5). 8 squares are shaded grey and the rest are unshaded white. Write the ratio of shaded squares to unshaded squares in its simplest form.



(2)

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3 At Ivy Lane Primary School, the ratio of Year 5 to Year 6 pupils is 4:5. The ratio of Year 6 to Year 7 pupils is 3:2. Find the ratio of Year 5 to Year 6 to Year 7 pupils in its simplest form.

(3)

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4 A model of a ship is 12 cm long. The real ship is 800 times as long.

How long is the real ship in metres?

Answer: ___ m

(2)

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5 Mei's family drive 180km in 3 hours at a constant speed. Work out how far they would travel in 5 hours at the same speed.

(3)

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6 Callum says, 'If I double both numbers in a ratio, the ratio stays the same.' Is Callum correct? Explain your answer using an example.

(2)

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7 Show that the ratios 4:6 and 10:15 are equivalent.

(3)

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8 Fatima enlarges a photograph measuring 10cm by 15cm by scale factor 3. Work out the dimensions of the enlarged photograph.

(2)

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9 In a sale, a puzzle costs £50. The price is reduced by 25%.

What is the sale price?

Answer: £___

(2)

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10 In a sale, a book costs £160. The price is reduced by 5%.

How much is the reduction?

Answer: £___

(2)

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11 7 keyrings cost 343p.

How much do 6 keyrings cost? Give your answer in pounds.

Answer: £___

(2)

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12 Ella, Priya and George share £52 in the ratio 6:2:5.

How much does George get?

Answer: £___

(3)

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13 A shop sells 6 cereal packs for £2.34 and 4 cereal packs for £4.79.

Which option costs less for each pack? Write 6 or 4 for the number of packs.

Answer: ___

(2)

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14 Amira and Dev share 192 football cards in the ratio 5:7.

How many football cards does Dev get?

Answer: ___

(1)

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15 The ages of three sisters, Amara, Zara and Ellie, are in the ratio 2:3:4. The sum of their ages is 54. Find each sister's age.

(3)

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16 Daisy and Victor share £54 in the ratio 1:5.

How much does Victor get?

Answer: £___

(3)

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17 In a sale, a ruler set costs £110. The price is reduced by 40%.

How much is the reduction?

Answer: £___

(2)

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18 The ratio of fiction books to non-fiction books is 5:6. There are 132 books altogether.

How many fiction books are there?

Answer: ___

(2)

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19 Hassan and Ivan share some money in the ratio 6:7. The difference between their shares is £5.

How much money is shared altogether?

Answer: £___

(2)

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20 A shop sells 3 pasta packs for £2.11 and 4 pasta packs for £3.16.

Which option costs less for each pack? Write 3 or 4 for the number of packs.

Answer: ___

(2)

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21 A recipe for rice pudding for 6 people uses 225 g of rice.

How much rice is needed for 36 people?

Answer: ___ g

(2)

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Mark scheme · 5.1 Reasoning: Ratio and Proportion: Test Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

9:15 circled; cao	B1

Answer: **9:15**

Question 2

identifies 8:12 oe	M1
2:3 oe cao (simplest form)	A1

Answer: **2:3**

Question 3

identifies common multiple of 5 and 3 for the Year 6 term, e.g. 15 oe	M1
scales both ratios to a shared Year 6 value: 12:15 and 15:10 oe	M1
12:15:10 oe cao (cannot be simplified further)	A1

Answer: **12:15:10**

Question 4

converts cm to m	M1
96 m cao	A1

Answer: **96 m**

Question 5

speed = 180 / 3 = 60km/h oe	M1
60 x 5, dependent on M1	dM1
300km cao	A1

Answer: **300km**

Question 6

correct judgement that Callum is correct oe	B1
valid example showing an equivalent ratio, e.g. 2:3 doubled is 4:6, which simplifies back to 2:3 oe	B1

Answer: **Callum is correct; doubling both parts of a ratio gives an equivalent ratio, e.g. 2:3 becomes 4:6, which simplifies back to 2:3.**

Question 7

simplifies 4:6 to 2:3 oe	M1
simplifies 10:15 to 2:3 oe	M1
cso; states both ratios simplify to 2:3 so are equivalent (answer printed, working must be shown)	A1

Answer: **4:6 = 2:3 and 10:15 = 2:3, so the ratios are equivalent.**

Question 8

one correct dimension, e.g. 30cm oe	M1
30cm by 45cm cao (both dimensions correct)	A1

Answer: **30cm by 45cm**

Question 9

reduction found	M1
£37.50 cao	A1

Answer: **£37.50**

Question 10

method for the percentage	M1
£8 cao	A1

Answer: **£8**

Question 11

343 divided by 7 = 49 seen	M1
£2.94 cao	A1

Answer: **£2.94**

Question 12

52 divided by 13 = 4 seen	M1
multiplies by their share	M1
£20 cao	A1

Answer: **£20**

Question 13

works out a cost per pack for each option	M1
6 cao	A1

Answer: **6**

Question 14

112 cao	B1

Answer: **112**

Question 15

54 / 9 = 6 (value of one part) oe	M1
Amara = 12 and Zara = 18 cao	A1
Ellie = 24 cao	A1

Answer: **Amara = 12, Zara = 18, Ellie = 24**

Question 16

54 divided by 6 = 9 seen	M1
multiplies by their share	M1
£45 cao	A1

Answer: **£45**

Question 17

method for the percentage	M1
£44 cao	A1

Answer: **£44**

Question 18

132 divided by 11 = 12 seen	M1
60 cao	A1

Answer: **60**

Question 19

1 parts = £5 so 1 part = £5 seen	M1
£65 cao	A1

Answer: **£65**

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Question 20

works out a cost per pack for each option	**M1**
3 cao	**A1**

Answer: **3**

Question 21

finds the amount for 1 person or a scale factor	**M1**
1,350 g cao	**A1**

Answer: **1,350 g**

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