



KS2.M-Y5R1 Reasoning: Number and Calculation

Calculators not allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Amelia has 3,425 ml of paint. She pours 275 ml into one pot and 450 ml into another. She then uses the rest to fill small bottles of 125 ml each. How many full small bottles can she fill? Show your working.

(3)

- 2** A school orders 48 boxes of pencils. Each box holds 24 pencils. The pencils are packed into pencil cases that hold 12 pencils each. How many pencil cases are needed to hold all the pencils?

(2)

- 3** Callum buys 3 games that cost 7.95, 12.50 and 4.60 pounds. He pays with a 50 pound note. How much change does he get? Show working in pounds and pence.

(3)

- 4** A baker makes 72 cupcakes. She packs them into boxes with 6 cupcakes in each box. After packing, she sells 7 boxes. How many cupcakes are left unpacked or unsold?

(3)

- 5** Priya has eight 250 g bars of chocolate and three 120 g bars. She melts all the chocolate and pours it into 100 g moulds. How many full moulds can she fill?

(2)

- 6** Explain your answer. Yusuf says that doubling 3.75 gives 7.5 and then adding 1.25 gives 8.75. He uses this to find 3.75×2.5 . Is Yusuf correct? Explain your answer.

(3)

- 7** A museum sells tickets at 6.80 pounds for children and 9.50 pounds for adults. On one day they sell 42 child tickets and some adult tickets. The total takings are 618.10 pounds. How many adult tickets were sold?

(3)

- 8** A recipe needs $2\frac{3}{4}$ cups of flour to make 12 scones. How much flour is needed to make 20 scones? Give your answer as a mixed number in cups.

(2)

- 9** Order these numbers from smallest to largest: 0.208, $\frac{208}{1000}$, 0.28

(2)

- 10** A garden centre sells bags of soil in 25 kg sacks. A landscaper needs 7.5 tonnes of soil. How many full 25 kg sacks should they buy? Show full working.

(3)

- 11** A bus journey takes 2 hours 45 minutes. If a driver completes 5 such journeys in a week, how many minutes does the driver spend driving on those journeys?

(2)

- 12** Sofia reads 64 pages in 80 minutes. At that rate, how many pages will she read in 3 hours 20 minutes? Show working.

(2)

- 13** A shop reduces the price of a jacket by 15%. The original price is 84 pounds. What is the sale price? Show your working.

(3)

- 14** Complete the function machine. Input 24 gives output 6. Input 40 gives output 10. What is the rule of the function? Show the operation.

(2)

- 15** A charity collected 1,275 stamps. They pack them into envelopes with 15 stamps in each. They want to share the envelopes equally between 7 schools. How many envelopes will each school get and how many stamps are left over (not in envelopes)?

(2)

- 16** Multiply 3,206 by 4. Then subtract 1,078. Show your working and give the answer.

(2)

- 17** A cyclist travels 18.4 km in 55 minutes. What is the average speed in km per hour, to one decimal place? Show your working.

(2)

- 18** Explain your answer. Two different methods are given to calculate $\frac{7}{10}$ of 350. Method A: $350 \div 10 = 35$, then $35 \times 7 = 245$. Method B: $350 \times 0.7 = 245$. Are both methods correct and why? Give a clear explanation.

(3)

- 19** There are 4 shelves. Each shelf holds 18 boxes. Each box contains 9 tins. How many tins are there in total? Then find the total if one shelf is removed and replaced with two extra shelves of the same size (so number of shelves changes by +1).

(2)

20 Oliwia buys 3 packs of notebooks. Each pack has 14 notebooks. She wants to share them equally between 5 friends. How many notebooks does each friend get and how many are left over?

(2)

Mark scheme · KS2.M-Y5R1 Reasoning: Number and Calculation

Question 1

- **M1** Correct subtraction to find remaining paint: $3,425 - 275 - 450 = 2,700$ ml
- **B2** Division of remainder by 125 gives 21 full bottles (21 cao)
- **Answer: 21 bottles**

Question 2

- **M1** Correct total pencils: $48 \times 24 = 1,152$
- **B1** Number of cases $1,152 / 12 = 96$ cao
- **Answer: 96 cases**

Question 3

- **M1** Correct total cost found: $7.95 + 12.50 + 4.60 = 25.05$
- **B2** Correct change $50.00 - 25.05 = 24.95$ cao
- **Answer: 24.95**

Question 4

- **M1** Correct number of boxes filled: $72 / 6 = 12$ boxes
- **B2** After selling 7 boxes, remaining cupcakes = $(12 - 7) \times 6 = 30$ cao
- **Answer: 30 cupcakes**

Question 5

- **M1** Correct total mass: $8 \times 250 + 3 \times 120 = 2,000 + 360 = 2,360$ g
- **B1** Number of 100 g moulds $2,360 / 100 = 23$ full moulds cao
- **Answer: 23 moulds**

Question 6

- **M1** Identifies Yusuf's method: $3.75 \times 2 = 7.5$ and $3.75 \times 0.5 = 1.875$ (or notes adding 1.25 is incorrect)
- **B2** Conclusion that Yusuf is incorrect and correct product is 9.375 with clear explanation (9.375 cao)
- **Answer: Yusuf is incorrect. $3.75 \times 2.5 = 9.375$**

Question 7

- **M1** Find child takings: $42 \times 6.80 = 285.60$
- **B2** Remaining $618.10 - 285.60 = 332.50$, adult tickets = $332.50 / 9.50 = 35$ cao
- **Answer: 35 adults**

Question 8

- **M1** Find flour per scone: $2 \frac{3}{4} = 11/4$ cups; $11/4 \div 12 = 11/48$ cups per scone
- **B1** Multiply by 20: $11/48 \times 20 = 220/48 = 55/12 = 4 \frac{7}{12}$ cups cao
- **Answer: 4 $\frac{7}{12}$**

Question 9

- **M1** Convert or compare decimals/fractions correctly, noting $208/1000 = 0.208$
- **B1** States that 0.208 and 208/1000 are equal, with 0.28 the largest cao
- **Answer: 0.208 = 208/1000 (equal, smallest), then 0.28 (largest)**

Question 10

- **M1** Convert tonnes to kg: $7.5 \text{ t} = 7,500$ kg
- **B2** Sacks needed $7,500 / 25 = 300$ cao
- **Answer: 300 sacks**

Question 11

- **M1** Convert 2 hours 45 minutes to minutes: $2 \times 60 + 45 = 165$ minutes
- **B1** Total for 5 journeys $165 \times 5 = 825$ minutes cao
- Answer: **825 minutes**

Question 12

- **M1** Find pages per minute: $64/80 = 0.8$ pages per minute or $4/5$
- **B1** Convert 3 h 20 min to 200 minutes and multiply: $0.8 \times 200 = 160$ pages cao
- Answer: **160 pages**

Question 13

- **M1** Correct calculation of 15% of 84 = $0.15 \times 84 = 12.6$ or 12.60
- **B2** Sale price $84 - 12.60 = 71.40$ cao
- Answer: **71.40**

Question 14

- **M1** Recognises operation needed: dividing both inputs by 4 gives outputs
- **B1** Rule is divide by 4 or 'divide by 4' cao
- Answer: **Divide by 4**

Question 15

- **M1** Envelopes made: $1,275 / 15 = 85$ envelopes
- **B1** Each school gets $85 / 7 = 12$ envelopes each with 1 envelope left over; stamps left not in envelopes = 0 because all stamps put in envelopes, so answer: 12 each, 0 stamps left cao
- Answer: **12 envelopes each, 0 stamps left**

Question 16

- **M1** Correct multiplication $3,206 \times 4 = 12,824$
- **B1** Correct subtraction $12,824 - 1,078 = 11,746$ cao
- Answer: **11,746**

Question 17

- **M1** Convert 55 minutes to hours: $55/60 = 11/12$ hours and set up speed = $18.4 / (11/12)$
- **B1** Correct speed = $18.4 \times 12/11 = 20.0727...$ so 20.1 km/h to one decimal place cao
- Answer: **20.1 km/h**

Question 18

- **M1** Recognises both methods find same value and are equivalent
- **B2** Clear explanation linking fraction and decimal: $7/10 = 0.7$ so both give 245, with correct reasoning cao
- Answer: **Both are correct. $7/10 = 0.7$ so $350 \times 7/10 = 350 \times 0.7 = 245$**

Question 19

- **M1** Total initially $4 \times 18 \times 9 = 648$ tins
- **B1** After change shelves = $4 - 1 + 2 = 5$ so $5 \times 18 \times 9 = 810$ tins cao
- Answer: **Initially 648, then 810**

Question 20

- **M1** Total notebooks $3 \times 14 = 42$
- **B1** Each friend gets $42 \div 5 = 8$ with 2 left over (8 and 2 cao)
- Answer: **8 each, 2 left over**