10.3-9 Reasoning Practice Paper 9: Test Pack

NATIONAL CURRICULUM KS2 National Curriculum Mathematics - Reasoning Practice Paper Framework · Calculators not allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A recycling centre receives 6 boxes of glass bottles for collection. Each box contains 35 bottles. Work out the total number of bottles collected.

(1)

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2 A charity food bank is packing crates of tinned food to deliver to families in need. Each crate can hold a maximum of 24 tins.

(a) The food bank has 517 tins of food to pack into crates. Work out the smallest number of crates needed to pack all 517 tins. **(2)**

.....

(b) Once packed, each full crate of 24 tins weighs 9.6 kg. The delivery van can carry a maximum load of 450 kg. Work out the greatest number of full crates the van can carry in one trip without exceeding the weight limit. **(2)**

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3 Bilal takes part in a charity fun run along a 10km course. He runs at a constant pace throughout. He starts at 10:00 and has completed 3/5 of the course by 10:36. Work out the time at which he will finish the whole course, if he keeps running at the same constant pace.

(3)

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4 A builder named Marcus is tiling a conservatory floor using hexagonal tiles arranged in rows. Row 1 has 4 tiles, row 2 has 7 tiles, row 3 has 10 tiles, and the pattern continues, with each row having 3 more tiles than the row before.

(a) Work out how many tiles are needed for row 8. **(2)**

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(b) Marcus has exactly 100 tiles. Working row by row from row 1, work out the greatest number of complete rows he can tile without using more than 100 tiles in total. **(3)**

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5 George records the points scored in a game each round over 4 days: 24, 22, 24, 18.

On the next day George does 30. What is the mean of all 5 days?

Answer: ___

(2)

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6 Point A is at (5, 7). It is translated by the vector (4, -3), where the first number is the move to the right and the second is the move up.

What are the coordinates of the image of A?

Answer: (___, ___)

(2)

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7 Point B is at (3, 2). It is reflected in the mirror line x = 5.

What are the coordinates of the image of B?

Answer: (___, ___)

(2)

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8 20 children answered a survey. 11 of them walk to school. In a pie chart this is shown as a sector.

What is the angle of the sector?

Answer: ___ degrees

(2)

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9 A pictogram uses (*) for 10 items and (half) for 5 items.

Mon: (*) (*) (*) (*) (*)
Tue: (*) (*) (half)
Wed: (*) (*) (*) (*) (*)

How many whole symbols are needed to show 50 items?

Answer: ___

(2)

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10 A pie chart shows how 36 customers answered a survey. The sector for those who bought a sandwich has an angle of 70 degrees.

How many customers bought a sandwich?

Answer: ___

(2)

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11 Part of a train timetable is shown.

Carlow: 12:20
Eastleigh: 12:28
Grange: 12:53
Bridgton: 13:18

Lily arrives at Eastleigh station at 12:08.

How many minutes must they wait for the train?

Answer: ___ minutes

(2)

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12 A pictogram uses (*) for 4 items and (half) for 2 items.

Year 3: (*) (half)
Year 4: (*)
Year 5: (*) (*) (*) (*)

How many items does Year 4 show?

Answer: ___

(2)

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13 A line graph shows the height of a plant in cm at different times. The points on the graph are: 8:00 = 15, 9:00 = 17, 10:00 = 21, 11:00 = 27, 12:00 = 26, 13:00 = 26.

Between which two consecutive times was the greatest increase? Write the earlier time.

Answer: ___

(2)

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14 Part of a train timetable is shown.

Eastleigh: 14:25
Grange: 14:57
Dunmere: 15:05
Fenwick: 15:41

Daisy arrives at Eastleigh station at 14:21.

How many minutes must they wait for the train?

Answer: ___ minutes

(2)

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15 Here are 4 ages of children in a team: 15, 20, 16, 21.

What is the mean?

Answer: ___

(2)

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16 A line graph shows the temperature in degrees Celsius at different times. The points on the graph are: 8:00 = 13, 9:00 = 14, 10:00 = 19, 11:00 = 20, 12:00 = 24, 13:00 = 26.

What was the value at 11:00?

Answer: ___ degrees

(1)

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17 The mean of 7 numbers is 29. 6 of the numbers are 25, 26, 30, 29, 33, 25.

What is the other number?

Answer: ___

(2)

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18 An angle measures 110 degrees. Is it acute, obtuse or reflex?

Answer: ___

(1)

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19 An isosceles triangle has two equal angles of 51 degrees each.

What is the third angle?

Answer: ___ degrees

(2)

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20 A pet shop orders 18 boxes of dog treats. Each box contains 32 packets. The shop sells 439 packets in one month. Work out how many packets of dog treats are left in stock at the end of the month.

(3)

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21 Part of a train timetable is shown.

Carlow: 10:15
Ashby: 10:26
Eastleigh: 10:49
Dunmere: 11:29

Bella arrives at Carlow station at 09:50.

How many minutes must they wait for the train?

Answer: ___ minutes

(2)

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Mark scheme · 10.3-9 Reasoning Practice Paper 9: Test Pack

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

Question 1

210 cao	B1

Answer: **210**

Question 2

(a) 517 / 24 = 21 remainder 13 (or 21.5... seen) oe	M1
(a) 22 cao, with recognition that the remaining 13 tins need an extra crate	A1

(a) Answer: **22 crates**

(b) 450 / 9.6 = 46.875 oe	M1
(b) 46 cao (crates), with recognition that 47 crates would exceed 450 kg	A1

(b) Answer: **46 crates**

Question 3

36 minutes represents 3/5 of the course, so 1/5 = 36 / 3 = 12 minutes oe	M1
whole course = 5 x 12 = 60 minutes, dependent on correct unit fraction time	dM1
11:00 cao	A1

Answer: **11:00**

Question 4

(a) recognises the rule: number of tiles in row n = 3n + 1 (or repeated addition of 3 from row 3) oe	M1
(a) 25 cao	A1

(a) Answer: **25 tiles**

(b) adds the tiles in successive rows to find a running total (4, 11, 21, 34, 50, 69, 91, ...) oe	M1
(b) identifies that 7 rows use 91 tiles (within 100) but 8 rows would need 91 + 25 = 116 tiles (more than 100), dependent on correct running total	dM1
(b) 7 cao	A1

(b) Answer: **7 rows**

Question 5

total 118 seen	M1
23.6 cao	A1

Answer: **23.6**

Question 6

adds the vector	M1
(9, 4) cao	A1

Answer: **(9, 4)**

Question 7

same distance from the mirror line	M1
(7, 2) cao	A1

Answer: **(7, 2)**

Question 8

360 divided by the total	M1
198 degrees cao	A1

Answer: **198 degrees**

Question 9

divides by the key	M1
5 cao	A1

Answer: **5**

Question 10

angle as a fraction of 360	M1
7 cao	A1

Answer: **7**

Question 11

finds the wait between arriving and the departure time (counting on or subtracting)	M1
20 minutes cao	A1

Answer: **20 minutes**

Question 12

uses the key	M1
4 cao	A1

Answer: **4**

Question 13

compares the changes	M1
10:00 cao	A1

Answer: **10:00**

Question 14

finds the wait between arriving and the departure time (counting on or subtracting)	M1
4 minutes cao	A1

Answer: **4 minutes**

Question 15

72 seen	M1
18 cao	A1

Answer: **18**

Question 16

20 degrees cao	B1

Answer: **20 degrees**

Question 17

29 x 7 = 203 seen	M1
35 cao	A1

Answer: **35**

Question 18

obtuse cao	B1

Answer: **obtuse**

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Question 19

102 seen	**M1**
78 degrees cao	**A1**

Answer: **78 degrees**

Question 20

18 x 32 = 576 oe	**M1**
576 - 439, dependent on correct value of 576	**dM1**
137 cao	**A1**

Answer: **137 packets**

Question 21

finds the wait between arriving and the departure time (counting on or subtracting)	**M1**
25 minutes cao	**A1**

Answer: **25 minutes**

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