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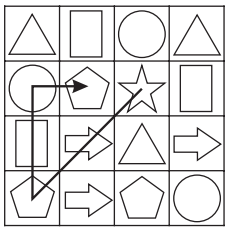
ANSWERS TO SAMPLE 11+ ASSESSMENT TEST — MATHS

1. E

Options B and D are not units of weight, so it can't be either of those options. A feather is approximately 1 g, so 2 g is far too light to be a bag of flour. 2000 kg is heavier than an average car, so the answer must be 2 kg.

2. C

When you follow the instructions, you will reach a square containing a pentagon:



3. 9:10

There are only 2 buses that stop at Maple Lane — the 9:10 bus which arrives at 9:39, and the 10:30 bus which arrives at 10:59. Jemima wants to arrive at Maple Lane before 10:15, so she needs to catch the 9:10 bus from Hart Street.

4. D

1 is made up of 3 thirds, so 9 is made up of 9 × 3 = 27 thirds.

5. B

An obtuse angle is an angle that is bigger than a right angle (90°), but smaller than two right angles (180°). Only angle B is bigger than 90° and smaller than 180°.

6. C

The number of children who said they liked both tigers and giraffes but not lions is shown by the section of the Venn diagram where only the circles for tigers and giraffes overlap. The number in this section is 5, so C is the correct answer.

7. A

Compare the place value of the digits in the options. Start with the value of the digits on the left. If these are the same, then compare the value of the next lot of digits to the right. The smallest number is 0.7.

8. 36 cm

The shape has 9 sides and each side is 4 cm long, so the perimeter is 9 × 4 = 36 cm.

9. D

There are 4 ten thousands, 7 thousands, 9 hundreds, 8 tens and 3 units — which is 47 983 when written in figures. To round this to the nearest thousand you round the 7. If the number to the right of the 7 is equal to or greater than 5 you round up, if it is smaller you round down. 9 is greater than 5, so the 7 rounds up to 8. The answer is 48 000.

10. 350

You need to work out 25 × 14. You can work it out by partitioning 14 into 10 + 4 and multiplying both numbers by 25. 10 × 25 = 250, 25 × 4 = 100. Then add these numbers together: 250 + 100 = 350.

11. 50%

8 children chose ham and twice as many children chose tuna (16). 8 children is 25% of the total number of children. So the percentage of children who chose tuna is 25% × 2 = 50%

12. E

The shape is made up of 12 equal segments. 6 of them are shaded, so $^6/_{12}$ of the shape is shaded. You can simplify $^6/_{12}$ to $^1/_2$ by dividing the numerator and the denominator by 6.

13. C

'<' means 'less than' and '>' means 'greater than'. Work through each of the options until you find the correct one:

A: 5.2 × 10 = 52.
So 5.2 × 10 < 52 is incorrect.
B: 52 < 5200. So 52 > 5200 is incorrect.
C: 520 ÷ 100 = 5.2.
So 52 > 520 ÷ 100 is correct.
D: 520 > 52. So 520 < 52 is incorrect.
E: 52 × 10 = 520.
So 52 × 10 < 52 is incorrect.

14. 1682

You could use the column method to work out 4596 – 2914.

$$\begin{array}{r} {}^{3}\cancel{4}\,{}^{1}5\;9\;6 \\ -\,2\;9\;1\;4 \\ \hline 1\;6\;8\;2 \\ \hline \end{array}$$

The answer is 1682 nails.

15. D

A swimming pool is usually several metres long and wide, and it may be over a metre deep — you would be most likely to measure these distances in metres. Volume is the length × width × depth, so he should measure the volume in m^3.

16. 3

Find the number in the 8 times table that's nearest to 75, and is also less than 75. 8 × 9 = 72, so 72 ÷ 8 = 9. 75 is 3 more than 72, so 75 ÷ 8 = 9 r 3. 3 pens are left over.

17. D

You can use estimation to work out the answer to this question. 21.7 × 9.4 is approximately 22 × 10 = 220. The answer will be the option that is closest to 220, which is option D.

18. B

The numbers that go into the shaded box must be prime and factors of 70. The factors of 70 are 1, 2, 5, 7, 10, 14, 35 and 70. Of these numbers, 2, 5 and 7 are prime numbers.

19. E

To find a fraction of a number you need to divide the number by the denominator (5) and multiply the result by the numerator (3). 60 ÷ 5 = 12. 12 × 3 = 36.

20. C

The difference between 4.6 – 4.5 = 0.1. There are 10 divisions — this means each division is 0.1 ÷ 10 = 0.01. Counting along the number line divisions in steps of 0.01 shows that the arrow is pointing at 4.53 (the arrow is pointing at the third division after 4.5).

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21. B

The modal colour of eyes will be the colour that's most common — the biggest section of the pie chart. The biggest section is for blue eyes.

22. A

Because all the subtractions and additions are roughly the same size, the equation which gives the largest amount will have the biggest multiplication in it. 21 × 20 is the biggest multiplication in all the options, so the answer is A.

23. A

Mark spends £3.99 + 99p + 99p + £1.99.
Round each amount to the nearest pound by adding 1p, so you get: £4 + £1 + £1 + £2 = £8.
Now find the change Mark will receive, £20 – £8 = £12.
Then add the 4p that you added to each amount, so that's £12 + 4p = £12.04

24. 17

You need to work out 106 ÷ 6.

$$\begin{array}{r} 17 \text{ remainder } 4 \\ 6\,\overline{)\,1^{1}0^{4}6} \end{array}$$

So Winston can fill 17 full egg boxes and he'll have 4 eggs left over.

25. 8

When the net is folded into a cube the opposite sides add up to 12, so you need to find pairs of faces whose numbers add up to 12. 3 + 9 = 12, so those two must be opposite sides. 5 + 7 = 12, so those two must be opposite sides. This means the face with a ? must be opposite the face with the number 4. 12 – 4 = 8, so the missing number is 8.

26. 71

Work out the difference between the numbers in the sequence to find the rule of the sequence. 35 – 23 = 12, 47 – 35 = 12. So the rule of the sequence is to add 12 each time. The next number will be 59 + 12 = 71.

27. A

55 is half of 110, so the answer to 55 × 622 is half of 68 420. Each of the digits in the number is even, so the number is easy to halve — just divide each digit by 2. 68 420 ÷ 2 = 34 210 — so the answer is A.

28. C

To find 2.345 m to the nearest 10 cm you need to convert it into centimetres. 1 m = 100 cm, so 2.345 m = 234.5 cm. 3 is in the tens column, so the 3 is being rounded. If the number to the right of the 3 is equal to or greater than 5 you round up, if it is smaller you round down. 4 is less than 5, so 234.5 cm rounds down to 230 cm. Divide 230 by 100 to convert it back into metres, so that's 230 ÷ 100 = 2.3 m.

29. 12 °C

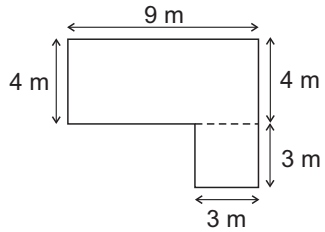
The average temperature in November is a third of the average temperature in May, which is 18 °C. A third of 18 °C is 18 °C ÷ 3 = 6 °C. The average temperature in September is twice the average temperature in November, which is 2 × 6 °C = 12 °C.

30. 87 cm

Convert all of the lengths of wool to centimetres, then add the lengths together.
1 cm = 10 mm, so 160 mm = 160 ÷ 10 = 16 cm.
1 m = 100 cm, so 0.45 m = 0.45 × 100 = 45 cm.
Shania has 16 + 26 + 45 = 87 cm of wool.

31. 45 m²

You can divide the living room into a square and a rectangle and find the area of both parts.



The missing side of the square part of the room is 7 m – 4 m = 3 m. The area of the rectangle is 9 × 4 = 36 m². The area of the square is 3 × 3 = 9 m². The total area is 36 + 9 = 45 m².

32. D

The factors of 21 are 1, 3, 7 and 21. The sum of these factors is 1 + 3 + 7 + 21 = 32.

33. 6.4 kg

The range is the difference between the biggest value and the smallest, so that's 74.2 kg and 67.8 kg. Count up from 67.8 to 74.2 to find the difference between them.
67.8 + 0.2 = 68, 68 + 6 = 74, 74 + 0.2 = 74.2
0.2 kg + 6 kg + 0.2 kg = 6.4 kg

34. C

There are 3 aces in 15 cards, so there is a $^{3}/_{15}$ probability of picking an ace. This can be simplified to $^{1}/_{5}$ by dividing the numerator and the denominator of the fraction by 3.

35. 240°

Each internal angle of an equilateral triangle is 60°. The angle shown on the spinner is made up of four 60° angles. 4 × 60° = 240°.

36. 1.08 kg

To find the total weight of the wood you need to work out 54 × 20. You could work this out by finding 54 × 2 and multiplying the answer by 10 (because 10 × 2 = 20). 54 × 2 = 108. 108 × 10 = 1080 g. 1000 g = 1 kg, so the weight of the wood in kilograms is 1080 ÷ 1000 = 1.08 kg.

37. (–3, –2)

To get from Point A to Point B you move 5 squares along the x-axis (horizontal axis) and 1 square down the y-axis (vertical axis). So to get from Point C to the missing point you need to follow the same path. 5 squares along the x-axis from Point C takes you to (–3, –1). 1 square down the y-axis from (–3, –1) takes you to (–3, –2).

38. D

Check each option until you find one that is true.
A: Only 1 prime number ends in 5, which is 5, all other numbers ending in 5 are divisible by 5. This statement is false.
B: 2 is a prime number because it is only divisible by 1 and itself. This statement is false.
C: Prime numbers have two factors (1 and themselves). This statement is false.
D: The first 3 prime numbers are 2, 3 and 5, so the sum of these numbers is 2 + 3 + 5 = 10. So this statement is true.
E: 2 is an even prime number. This statement is false.

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39. C

To find the volume of a cuboid you need to work out the length x width x height. You're given the area of the square face, which is width x height. So to find the volume you need to multiply the area of the square face by the length.
$4 \times 15 = 60\ cm^3$. You need to find the area for both cuboids so multiply this by two: $60\ cm^3 \times 2 = 120\ cm^3$.

40. 8%

You need to work out how many animals there are in total. Mary sells 8 of her sheep, so she'll have $12 - 8 = 4$ sheep. In total she'll have $4 + 16 + 24 + 6 = 50$ animals. 4 of the 50 animals are sheep, or $^4/_{50}$. To find a percentage you need to make an equivalent fraction with 100 as the denominator. So multiply the numerator and the denominator by 2 to get $^8/_{100}$. $^8/_{100}$ is the same as 8%.

41. B

To find the mean temperature you need to add up all the temperatures and divide the answer by the number of days.
$12 + 11 + 9 + 10 + 8 + 7 + 6 = 63$.
$63 \div 7 = 9$ °C.

42. £1.17

Divide £2.85 by 5 to find the cost of one scone.

$$\begin{array}{r} 5\ 7 \\ 5\overline{)2^{2}8^{3}5} \end{array}$$

So each scone costs 57p.
Divide £1.80 by 3 to find the cost of one tea.
$18 \div 3 = 6$, so £1.80 ÷ 3 = 60p.
So the total cost of one tea and one scone = 57p + 60p = £1.17

43. 20 minutes

1 litre = 1000 ml. $1000 \div 250 = 4$, so it would take 4 minutes for 1 litre of water to drain from the bucket. This means that it would take $5 \times 4 = 20$ minutes to drain 5 litres from the bucket.

44. 50°

A parallelogram has 2 equal obtuse angles and 2 equal acute angles. The angle to the left of angle a is 130° because it is the same size as the other obtuse angle in the parallelogram. Angles on a straight line add up to 180°, so angle $a = 180° - 130° = 50°$.

45. D

4 dogs would need 4 dog collars and they'd need $4 \times 6 = 24$ tins of dog food. So you need to find the expression which will give you $4c + 24t$. In option D there are 4 lots of $c + 6t$, so that's $(c + 6t) + (c + 6t) + (c + 6t) + (c + 6t) = 4c + 24t$.

46. D

Point Q is directly above the point (7, 2), so the x-coordinate of point Q will be the same as (7, 2), so that's 7. Point Q is horizontally across from the point (2, 7), so the y-coordinate of point Q will be the same as (2, 7), so that's 7. The coordinates of Point Q are (7, 7).

47. A

There are $8 + 7 + 5 = 20$ balls altogether. 8 of the balls are green, so that means that $20 - 8 = 12$ of the balls are not. This means that there is a $^{12}/_{20}$ probability of not picking a green ball. This can be simplified to $^3/_5$ by dividing the numerator and the denominator by 4.

48. £30.50

For 3 hours' work, Jodie is paid 3 x £6.50 = £19.50. She is also paid 5% of £220. 10% of £220 is £220 ÷ 10 = £22. So 5% of £220 is £22 ÷ 2 = £11, because 5% is half of 10%. So in total, Jodie earned £19.50 + £11 = £30.50

49. £110

The customer wants to travel for 6 weeks, so you need to put 6 into the equation in the place of x.
$C = 10 + 20(6 - 1)$
$C = 10 + 20 \times 5$
$C = 10 + 100$
C = £110

50. E

Find which rule will give the first number in the sequence. For the first number $n = 1$, only 3 rules will give 4 as an answer. If $n = 1$, $n^2 + 3 = 1 + 3 = 4$, $2n + 2 = 2 + 2 = 4$ and $(n + 1)^2 = 2^2 = 4$. Try these rules for $n = 2$. $n^2 + 3 = 4 + 3 = 7$, $2n + 2 = 4 + 2 = 6$ and $(n + 1)^2 = 3^2 = 9$. Only $(n + 1)^2$ gives the right number for both terms, so that's the correct expression.

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