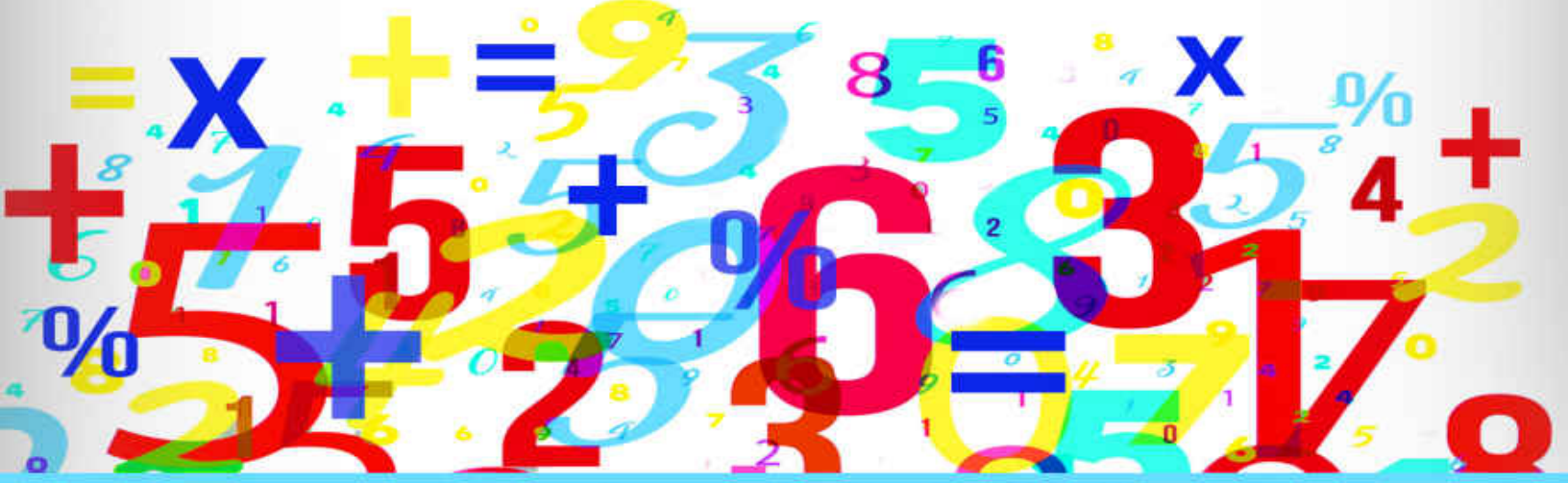
11+ EXCELLENCE

101

PRACTICE QUESTIONS FOR 11 PLUS GRAMMAR SCHOOL ENTRANCE EXAMS MATHEMATICS

With Answers and Simple Explanations



A. L. BROWN

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Practice Questions
for
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Grammar School Entrance Exams
Mathematics

With answers and simple explanations

A.L. Brown

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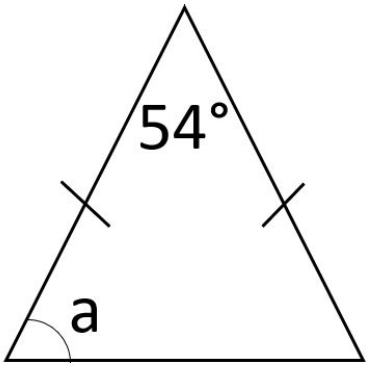
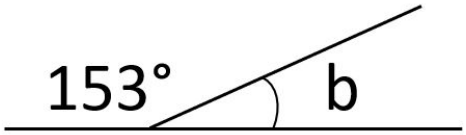
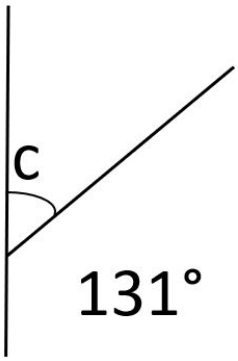
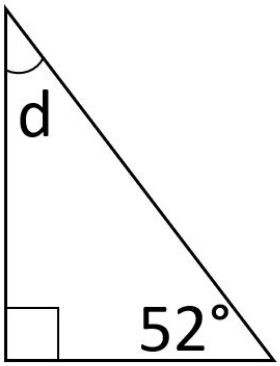
About the Author

Q1. Which angle, a,b,c or d, is the largest in the diagrams below? A1









Q2. How many prime numbers are there between 15 and 30? A2

Q3. Which of the following has the smallest value? A3

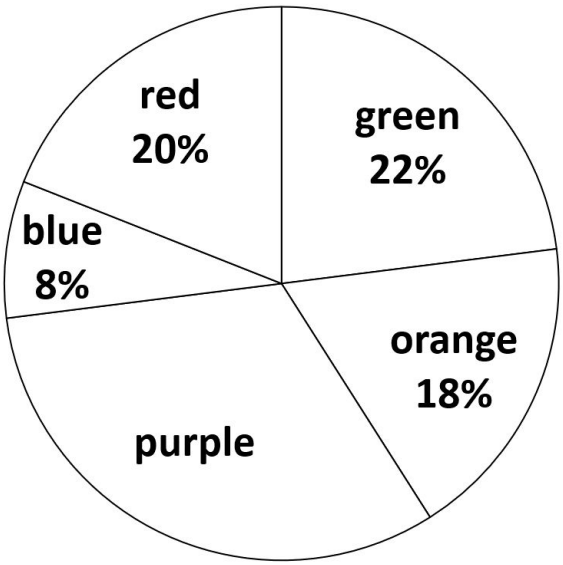
A. 10% of 80

B. 20% of 60

C. 30% of 40

D. 50% of 20

Q4. This pie chart shows the proportion of different coloured sweets in a bag of boiled sweets. In total 12 of the sweets were blue. How many of the sweets were purple? A4



Q5. Write down all the numbers smaller than 50 which are multiples of both 4 and 6. A5

Q6. Tickets for a festival cost £5.80 for adults and £3.30 for children. How much would it cost for 2 adults and 3 children to go? A6

Look at the Bus Timetable below:

Sandy Bay	7.15	7.30	7.45	8.00
Pierpoint	7.27	7.42	7.57	8.12
Whitesea Beach	7.48	8.03	8.18	8.33
Rockpool	8.08	8.23	8.38	8.53
Westleigh	8.45	9.00	9.15	9.30
Plympton Quay	9.09	9.24	9.39	9.54
Starhead Lighthouse	-	10.05	-	10.35
Benning Bay	-	10.38	-	11.08
The Shingles	-	10.58	-	11.28
Rocky Point	9.55	-	10.25	
Hunster	10.20	-	10.50	
Coombe	10.36	-	11.06	

Q7. Ed needs to catch a bus from Pierpoint to Plympton Quay, arriving by 9.30am. What is the latest bus he could catch? A7

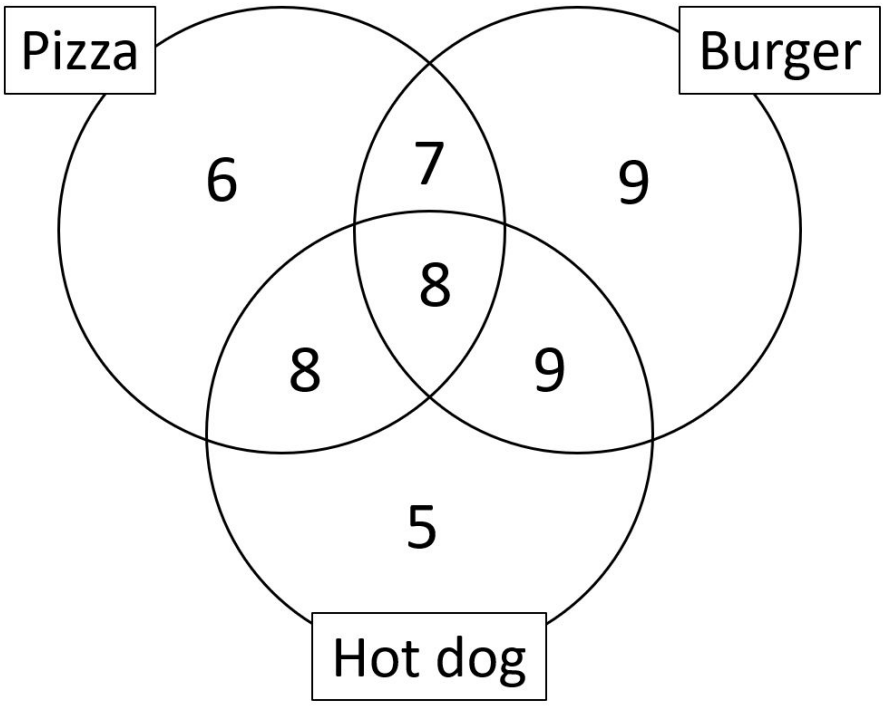
Q8. How long does Ed's journey take? A8

Q9. Jana thinks of a number. She multiplies it by 8 and subtracts 5. The result is 51. What was Jana's original number? A9

Q10. Hattie has 3 pieces of wood. One is 32cm long, one is 180mm long and the other is 0.58m long. She lays them end to end. What is their total length in cm? A10

Q11. There are 44 packets of crisps in a box. A supermarket buys 18 boxes. How many packets of crisps is this? A11

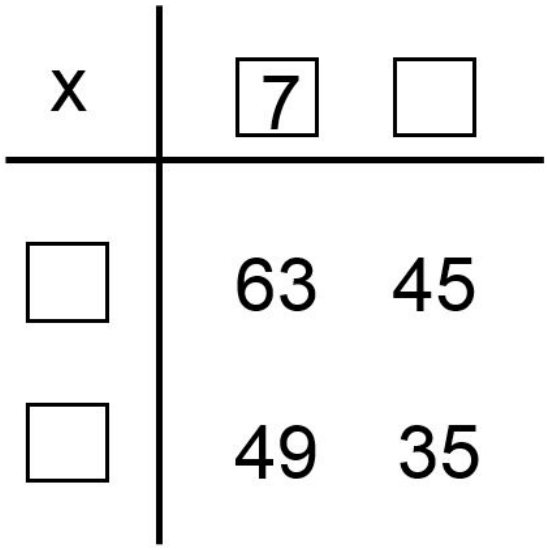
A group of office workers were asked which fast foods they liked. The Venn diagram below shows their preferences.



Q12. How many liked Hot dogs and Burgers but didn't like Pizza? A12

Q13. How many eighths are there in 6? A13

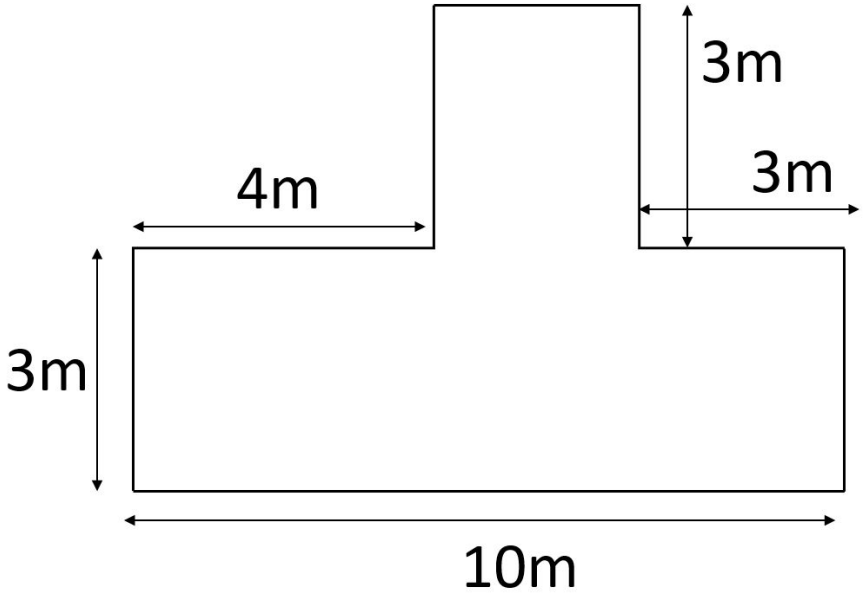
Q14. Write the missing numbers to make this multiplication grid correct.
A14



Q15. What is two-fifths of 45? A15

Q16. Regan spends £2.05 on lunch each weekday. How much does she spend in a week? A16

The diagram below shows a plan of Oakhouse School's Library.



Not to Scale

Q17. What is the area of the Library? A17

Q18. It costs £9 per a square metre to buy carpet for the library. How much will it cost in total? A18

Q19. The area of a rectangular field is $18m^2$. Which of the following could be its perimeter? Circle the correct answer. A19

18m 24m 20m 29m 9m

Q20. Two-thirds of a number is 54. What is the number? A20

Q21. Which ratio is equivalent to 24 : 40? Circle the correct answer. A21

a. 12 : 80

b. 24 : 48

c. 1 : 2

d. 3 : 5

e. 4 : 5

Q22. A packet of Chewy Chews costs 32p. Bayley bought 6 packets to give to her friends. How much change did she get from £10.00? A22

Success-Star Sports Shop has a 25% off sale.
Bilal buys a basketball hoop which normally costs £30.00

Q23. How much did Bilal pay for the basketball hoop in the sale? A23

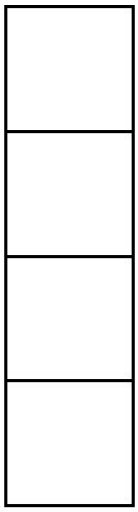
In her money box, Zhu has four 50p coins, six twenty pence coins, three 10 pence coins and five 5p coins.

Q24. How much more does she need save to get to £5.00? A24

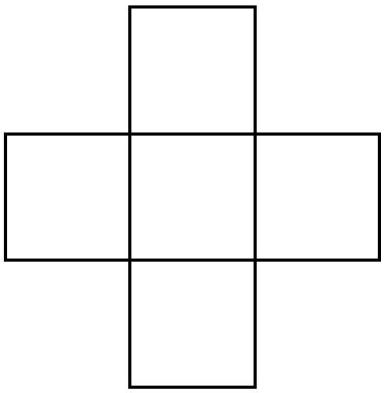
Q25. What fraction of a minute is 24 seconds? Write your answer in its lowest terms. A25

Shape X and shape Y are made up of identically sized squares. The perimeter of shape X is 40cm

Q26. What is the perimeter of shape Y? A26



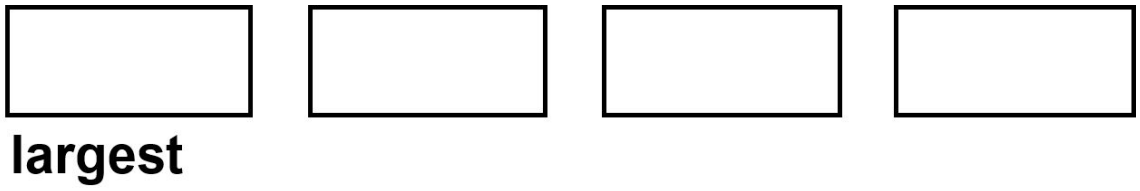
X



Y

Q27. Write these numbers in order of size, starting with the largest. A27

1.88 1.7 1.878 0.887



Q28. If X is a whole number which is divisible by 3, 5 and 10, tick which of the following must also be divisible by 3,5 and 10? A28

a. X + 15

b. X + 30

c. X + 40

d. X + 140

In Year 6, 16% of the children have played football for the school. There are 125 children in Year 6.

Q29. How many have not played football for the school? A29

Q30. Circle which of the following numbers has an odd number of factors. A30

35 36 37 38 39

A set of drawing pencils costs £5.60 but in the sale it has 15% off.

Q31. What is the sale price of the pencils? A31

Cinema tickets cost £8.30 for adults and £5.60 for children.

Q32. What is the maximum number of people who can go to the cinema for £40? A32

Q33. Tick which one of the following is most likely the length of a car. A33

a. 180mm
b. 4.5 m
c. 190 cm
d. 5 feet

A box contains 6 red balls, 5 blue balls and 9 green balls. Tom pulls out a ball at random without looking.

Q34. Circle the answer which shows the probability that it is blue. A34

a. $\frac{3}{10}$ b. $\frac{5}{21}$ c. $\frac{1}{5}$ d. $\frac{1}{4}$

Angelo’s spelling test scores since the start of term are as follow:

20 18 17 20 14 17 13

Q35. What is Angelo’s median score? A35

Q36. How many faces does a hexagonal pyramid have? A36

Chan thought of a number. He subtracted 11 and then divided the answer by 9. The result was 9.

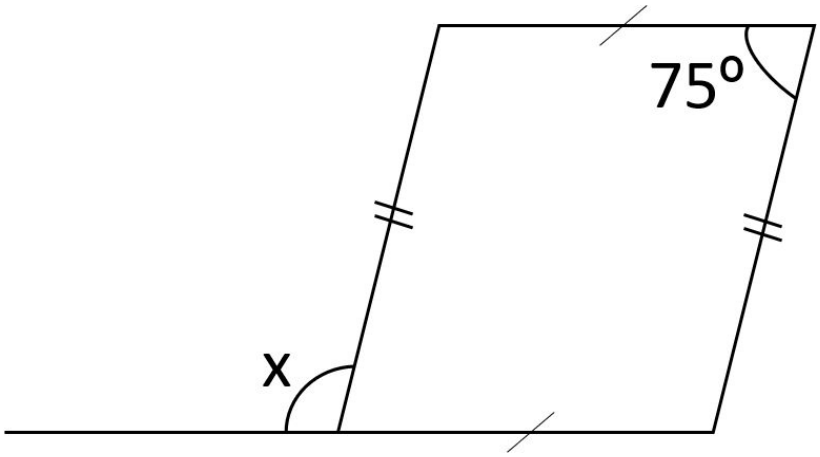
Q37. What was the number Chan thought of? A37

Q38. Which number does X stand for in the Magic Square below? A38

All rows, columns and diagonals in this square add up to 74.

26		13	
	21		18
19			
14		25	X

Q39. What is the value of angle X? A39



The ratio of water to red dye in a solution is:

9 : 5.

Q40. If there are 180ml of water in the solution, how many ml of dye are there? A40

Freddie is decorating cupcakes with chocolate buttons. He puts 6 on each cake. Altogether he has 230 chocolate buttons.

Q41. How may cupcakes can he decorate? A41

Q42. What is 3.143876 rounded to two decimal places? A42

Q43. Round 77,595 A43

to the nearest 10 ☐

to the nearest 100 ☐

to the nearest 1000 ☐

There are 48 chocolates in a box. $\frac{1}{12}$ are white chocolate, $\frac{2}{3}$ are milk chocolate. The rest are plain chocolate.

Q44. How many plain chocolates are there? A44

☐

A regular pentagon has sides of 4cm.

A square has the same perimeter as this pentagon.

Q45. What is the length of one side of the square? A45

2,255 tickets for the Summer Fayre are printed.

1,472 have been sold.

Q46. How many are still to be sold? A46

Q47. What is the sum of the factors of 24? A47

Here is a rule for how long it takes to cook some meat.

Cooking time: 20 minutes
Plus an extra 40 minutes per kilogram.

Q48. How many kilograms of meat takes 2 hours to cook? A48

Q49. How many minutes will it take to cook 5kg of meat? A49

A tank holds 120 litres. Water is leaking out of it at a rate of 200ml a minute.

Q50. How long will it take for the tank to empty? A50

Three years ago, Amir was a quarter as old as his mum. Amir's mum is 39 years old

Q51. How old is Amir? A51

In a tin of coloured beads, 18% are red. There are 270 beads altogether.

Q52. How many are not red? A52

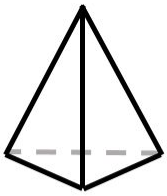
Justine has a bag of marbles. Ten are blue, nine are clear and six are green. She chooses one at random.

Q53. What is the probability that she chooses one which is not blue? Circle the correct answer. A53

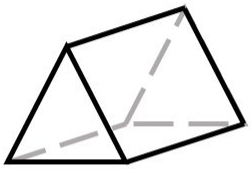
a. $\frac{2}{5}$ b. $\frac{15}{24}$ c. $\frac{3}{5}$ d. $\frac{10}{25}$

Here are diagrams of some 3-D shapes.

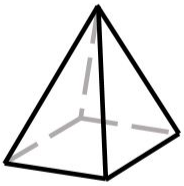
Q54. Tick each shape which has the same number of vertices as edges.
A54



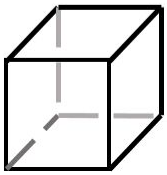
triangular based pyramid ☐



triangular prism ☐



square based pyramid ☐



cube ☐

Class 4 are going on a trip to a theme park. The total price is £26.75. This includes the bus fare, entrance fee and lunch. Lunch costs £5.75 and the bus fare is 50% of the entrance fee.

Q55. How much is the entrance fee? A55

Q56. Which of the following has the smallest value? A56

a. 60% of 20

b. 50% of 30

c. 40% of 40

d. 30% of 50

Q57. James lives 4.8km away from Arjun. How far is that in metres? A57

One kilometre is roughly five-eighths of a mile

Q58. How many miles away from Arjun does James live? A58

Hattie and Joe buy some daffodil bulbs.

Hattie buys a bag of 12 bulbs for £10.25

Joe buys 12 single bulbs for 95p each.

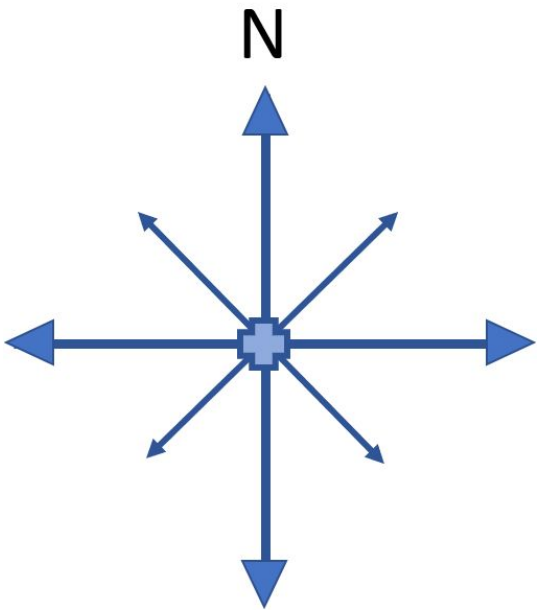
Q59. How much more does Joe pay than Hattie? A59

A piece of wood is 4m 8cm long. It is cut into 3 equal pieces.

Q60. How much does each piece measure? A60

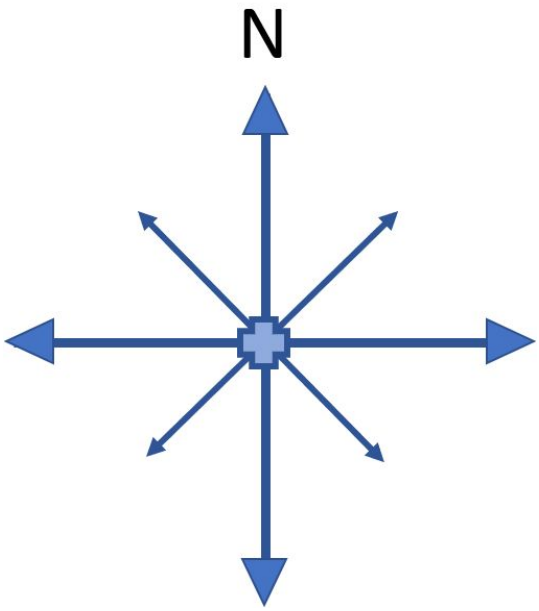
Jan made a bracelet with red and blue beads. For every 4 beads she used, 3 were red. Altogether she used 18 red beads.

Q61. How many beads did Jan’s necklace have altogether? A61



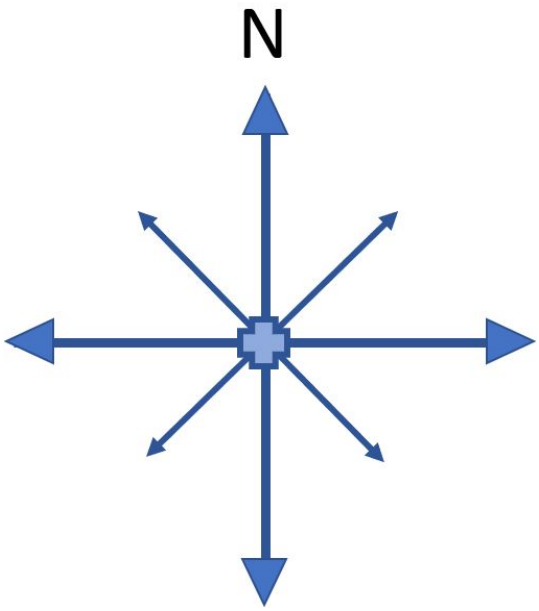
Ewan faces North West then turns 225º clockwise

Q62. Which direction is Ewan facing now? A62



Alicia turns a quarter turn clockwise and then 135º anti-clockwise. She ends up facing South-West.

Q63. Which direction was Alicia facing at the beginning? A63



Hanai faces North-East and turns clockwise until she faces West.

Q64. How many degrees does she turn through? A64

John writes the following equation.

$$C = \frac{3}{7} B$$

He uses it to write four more but one of the four is incorrect.

Q65. Circle the incorrect equation below. A65

a. $7C = 3B$

b. $3C = 7B$

c. $B = \frac{7}{3} C$

d. $\frac{C}{B} = \frac{3}{7}$

Q66. Write the next two numbers in the following sequence. A66

1 4 16 64 ___ ___

Q67. Write the next two numbers in the following sequence A67

6 10 18 34 ___ ___

Mrs. Sood gives out stars for good work in her class. Her box contains gold, silver and bronze stars and she chooses them at random, without looking.

The box contains 21 silver stars and 12 gold stars.

The probability that she chooses gold is 1/4

Q68. How many bronze stars are in the box? A68

In a carpark, 18% of cars are white. If there are 150 cars in the carpark.

Q69. How many are **not** white? A69

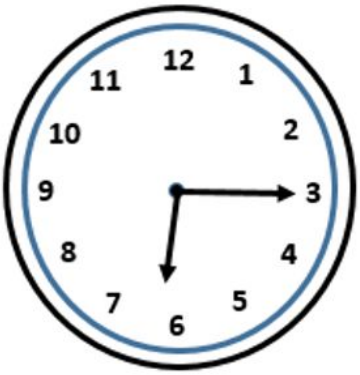
You need 4 eggs to make a sponge cake.

Q70. How many sponge cakes can be made with 8 dozen eggs? A70

Betty needed 165 small prizes for “Lucky Dip” stall.The prizes came in packs of 14.

Q71. How many packs did Betty need to buy? A71

Q72. How many degrees does the minute hand turn through from 5 o’clock to quarter past 6? A72



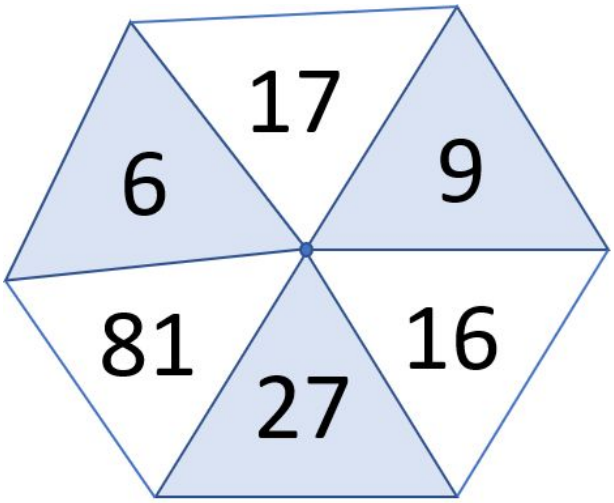
Q73. Round 5.324585 to two decimal places. A73

Harry thinks of a number and calls it **x.**

If Harry adds 8 to **x** and multiples the answer by 3 he gets the same answer as he would if he had just multiplied **x** by 7.

Q74. What is the value of **x**? A74

Serena spins this spinner:



Q75. Tick which outcome is most likely. A75

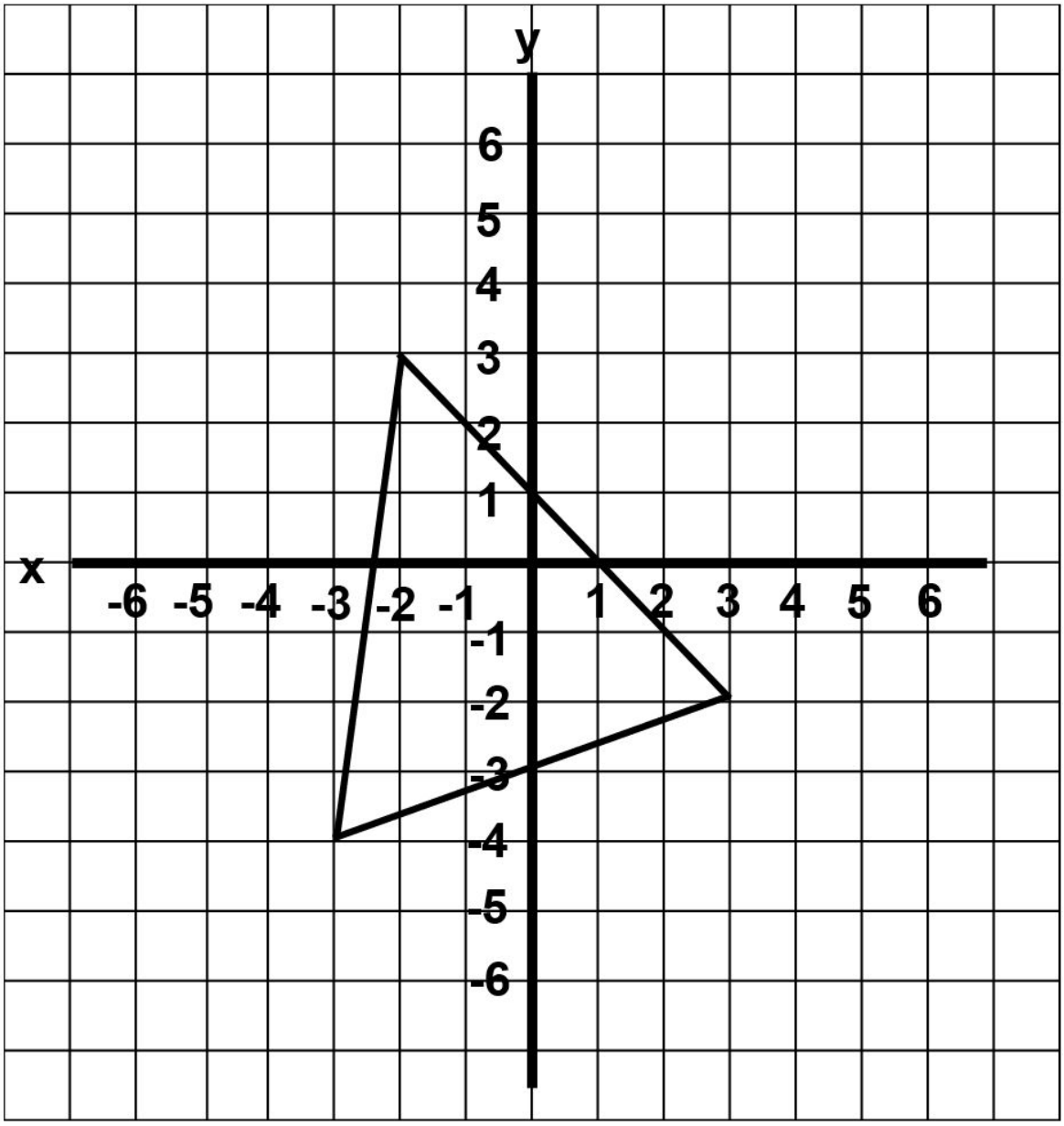
a. The spinner lands on an even number.

b. The spinner lands on a prime number.

c. The spinner lands on a multiple of 3

d. The spinner lands on a number less than 10.

Q76. Write down the coordinates of the vertices of this triangle. A76



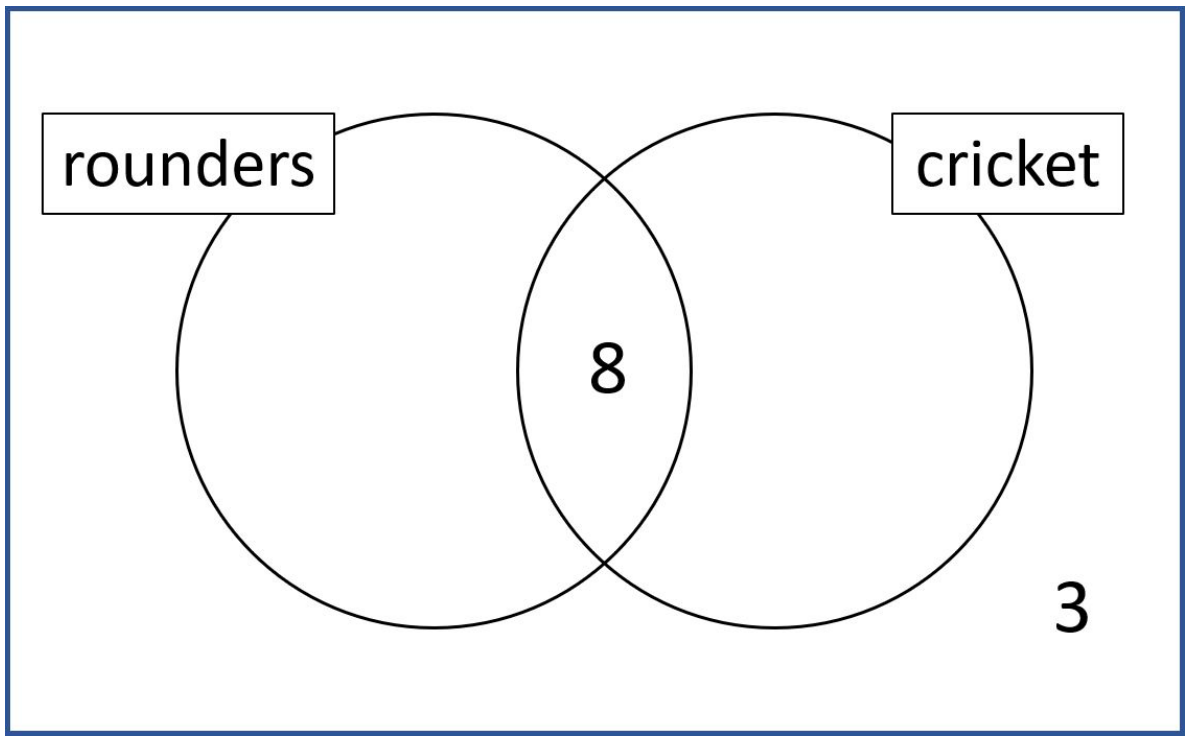
Carmelita gets on a coach at 11:15 am and arrives at her destination at 3:25pm.

Q77 How long is Carmelita's journey? A77

In summer in Sweden, there is daylight for **18 hours** each day.

Q78. For what percentage of the day is there daylight? A78

This Venn diagram shows the number of children in Class 3 who like rounders or cricket. Three children like neither. Class 3 has 32 pupils.



Q79. If 11 children like rounders, how many like cricket? A79

Q80. How many children liked only one sport? A80

Harvey buys three pints of milk. He pays with a £20 note. His change is £18.08

Q81. What is the cost of one pint of milk? A81

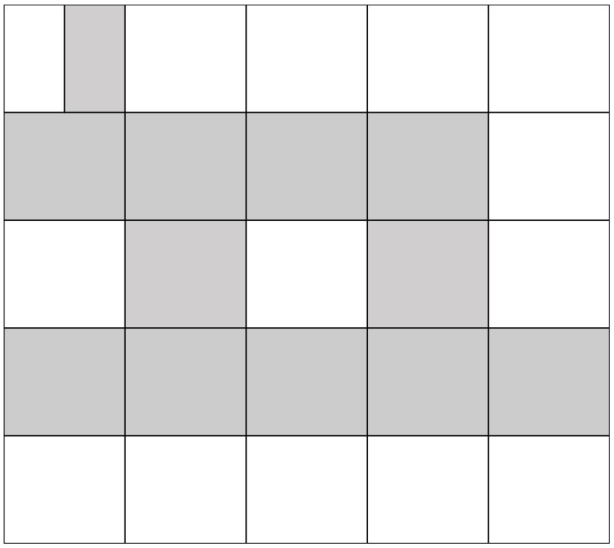
Wes chose a number between 1 and 30. He doubled it and added 2. The answer was 40.

Q82. What number did Wes start with? A82

Q83. What is the value of **y** in the following equation? A83

$$4y - 3 = 51 - 2y$$

Q84. What percentage of this square is shaded? A84



A bus leaves the bus station for Hemmingford every 8 minutes and for Ivybridge every 6 minutes. A bus for Hemmingford and a bus for Ivy bridge both leave the bus station at 10am.

Q85. What is the next time a bus for Hemmingford and a bus for Ivybridge will leave at the same time? A85

A shopping bag has a mass of 4.8 kilograms. Of this, 1.6kg are potatoes.

Q86. What fraction of the total mass is made up of potatoes. Circle the correct answer. A86

a. $\frac{8}{23}$ b. $\frac{7}{26}$ c. $\frac{1}{4}$ d. $\frac{1}{3}$

Q87. Circle which of the following is most likely to be the mass of a bag of sugar? A87

a. 20g

b. 200kg

c. 2kg

d. 20 litres

Thirty-six thousand, five hundred and four people attended the cup final.

Q88. What is this rounded to the nearest thousand? Circle the correct answer. A88

a. 36,500

b. 36,000

c. 37,000

d. 36,600

The average monthly temperatures in ºC in Paphos are as follows:

14 14 15 18 21 24 26 27 25 23 18 15

Q89. What is the mean average monthly temperature? A89

Q90. What is the range of temperatures? A90

On a map, 1cm represents 15km.

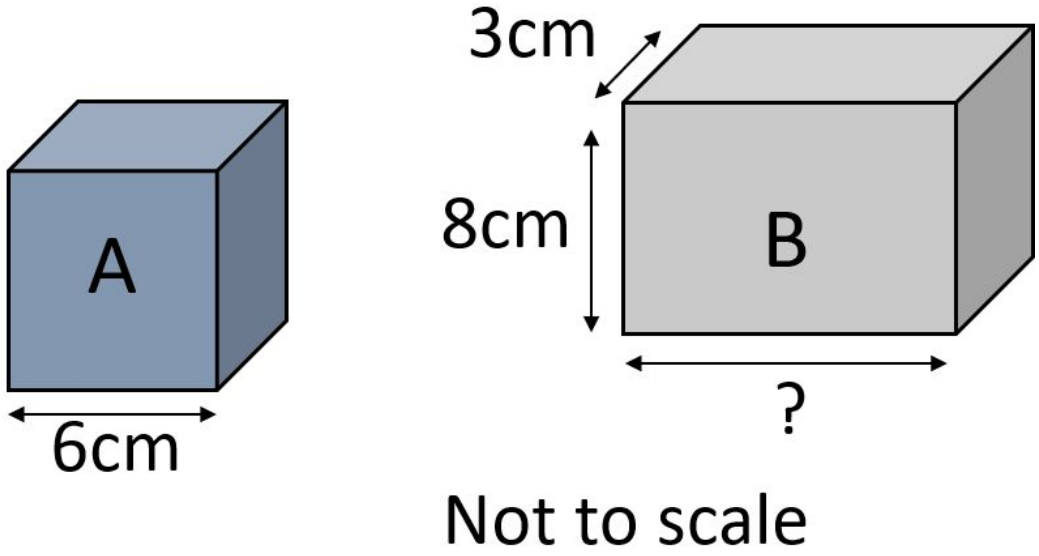
The distance between London and Liverpool is 360km.

Q91. On the map, what is the distance in centimetres between the two cities? A91

Hope has a job in a toy shop. She earns £8.50 and hour and receives 5% of the cost of any toys she sells. On Monday, Hope worked for 8 hours and sold £120 worth of toys.

Q92. How much did Hope earn on Monday? A92

Q93. The volume of the cube and cuboid below are identical. What is the missing length of the cuboid. A93



Q94. Circle which of the following times is quarter to six in the morning.
A94

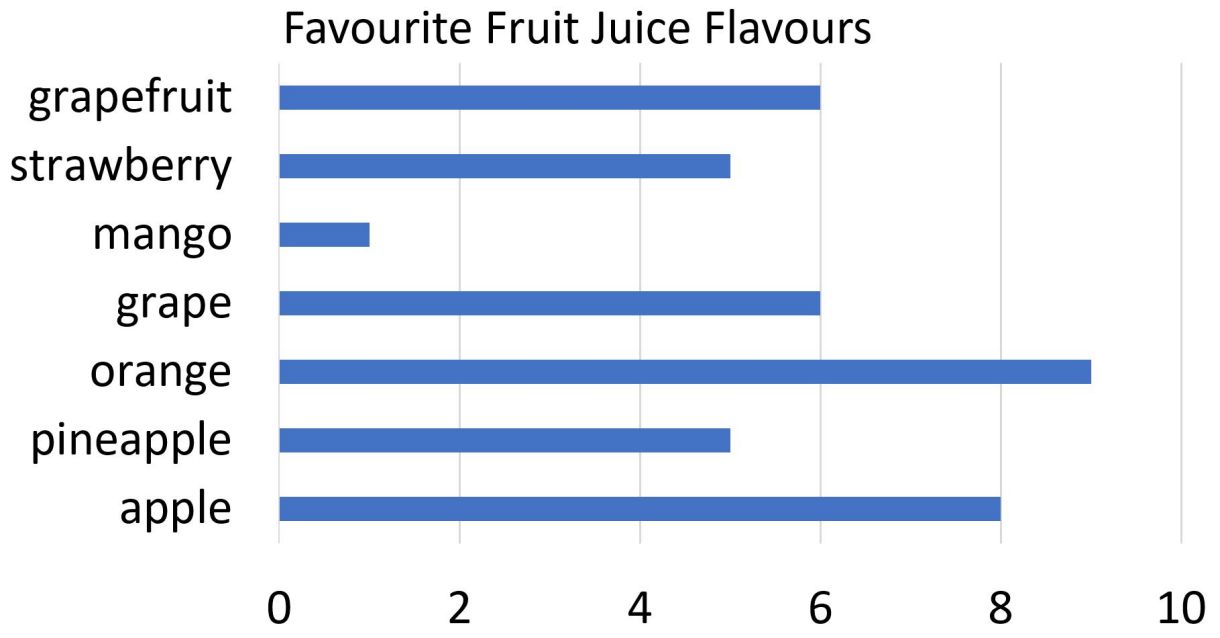
a. 17:45

b. 05:45

c. 06:15

d. 18:45

The chart below shows the favourite fruit juice flavours of a group of adults.



Q95. How many adults chose a favourite flavour altogether? A95

Q96. What fraction of adults chose apple flavour? A96

The formula for converting temperatures in degrees Celsius (**C**) to degrees Fahrenheit (**F**) is:

$$F = \frac{9}{5} C + 32$$

Q97. What is 10 degrees Celsius in Fahrenheit? A97

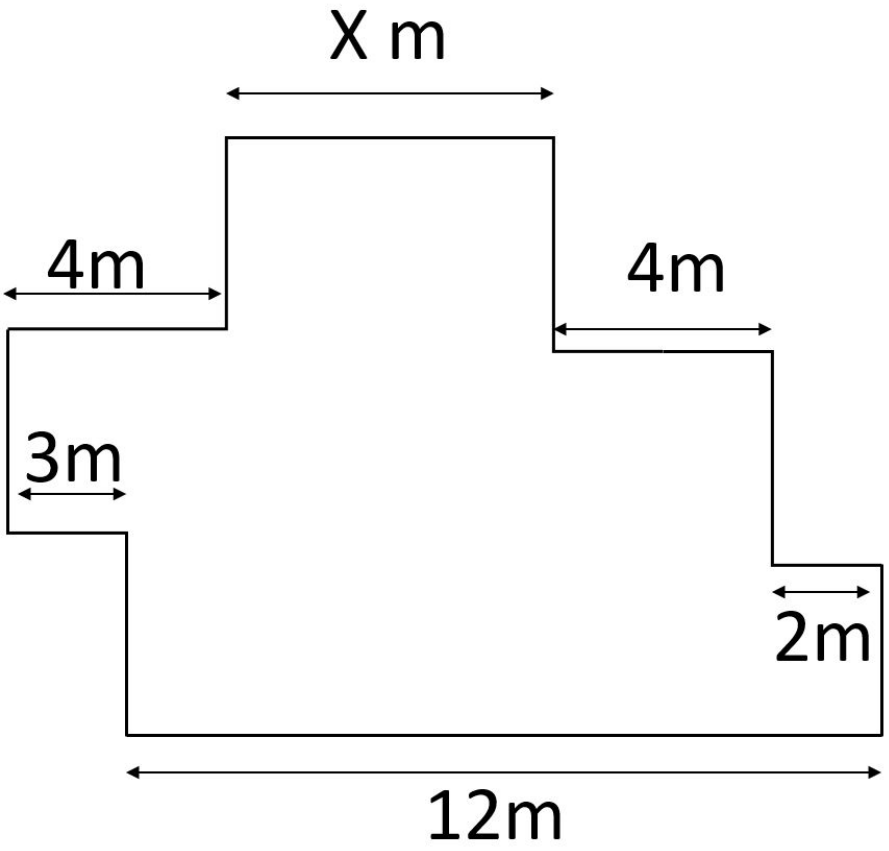
Tara wrote down her last 5 test scores, but one accidentally got erased.

Her scores were 78, 89, 96, 82 and X (the missing score).

Her mean average score was 83.

Q98.What was Tara’s missing score, X? A98

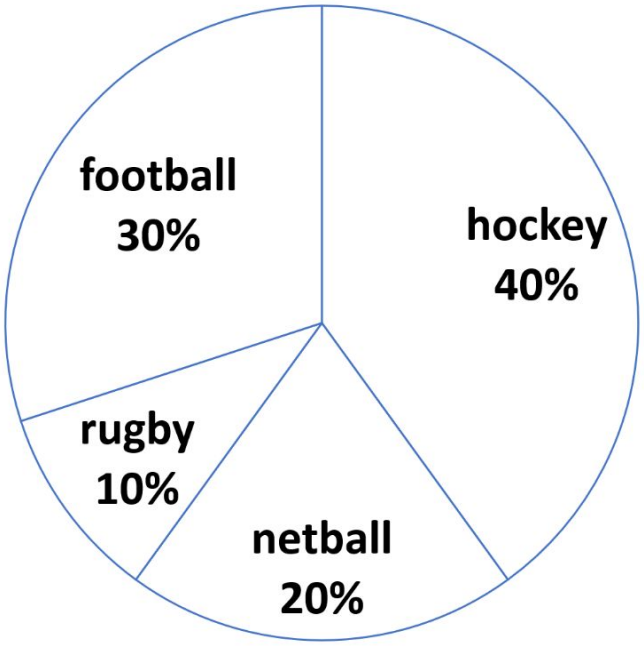
Q99. Calculate length X. A99



Kahlil did his homework from 4:45pm to 6:20pm. For a fifth of that time he was studying maths.

Q100. How long did Kahlil spend studying maths? A100

This pie chart shows which sport 120 children chose to play on a Wednesday afternoon at Linford School.



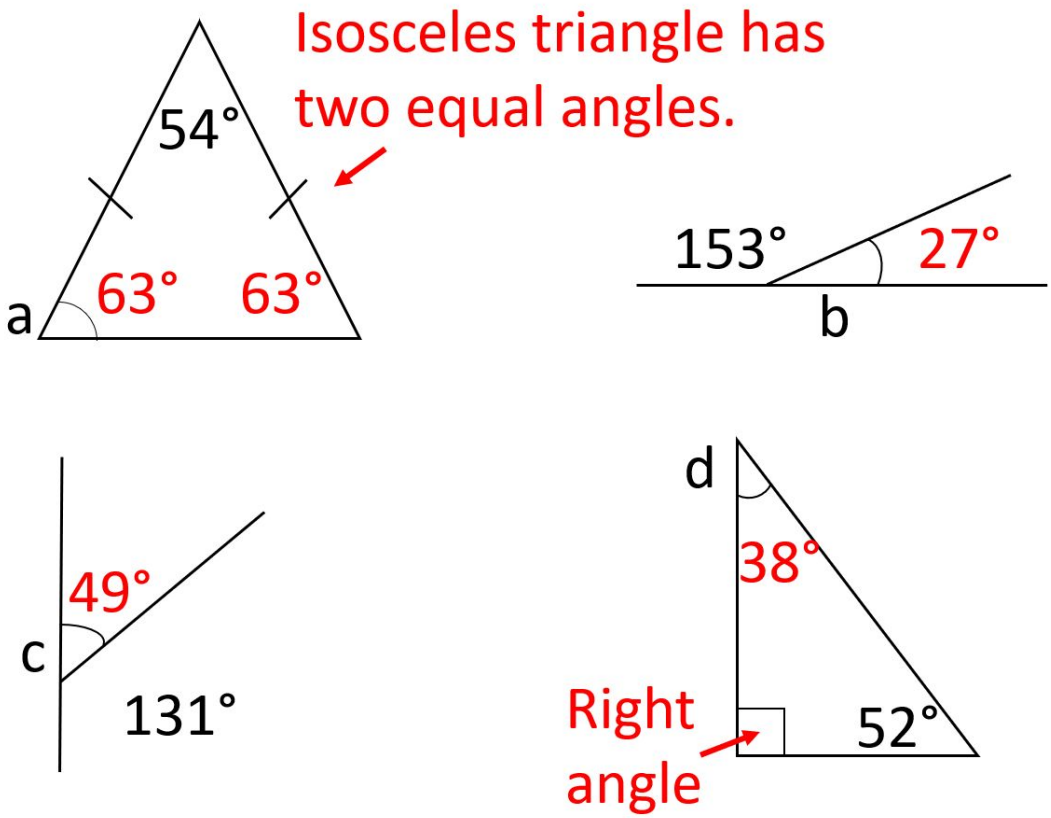
Q101. How many children chose to play hockey? A101

Answers

And

Explanations

A1. Which angle, a,b,c or d, is the largest in the diagrams below? Q1



Angles inside a triangle add up to 180º and angles along a straight line also add up to 180º. You can work out the missing angles by subtracting the angles you are given from 180º.

a

A2. How many prime numbers are there between 15 and 30? Q2

A prime number is a number that can only be divided by itself and 1.

First write down all the numbers between 15 and 30, then stike out any which can be divided by any number except themselves and 1.

~~15~~ ~~16~~ 17 ~~18~~ 19 ~~20~~ ~~21~~ ~~22~~ 23 ~~24~~ ~~25~~ ~~26~~ ~~27~~ ~~28~~ 29 ~~30~~

4

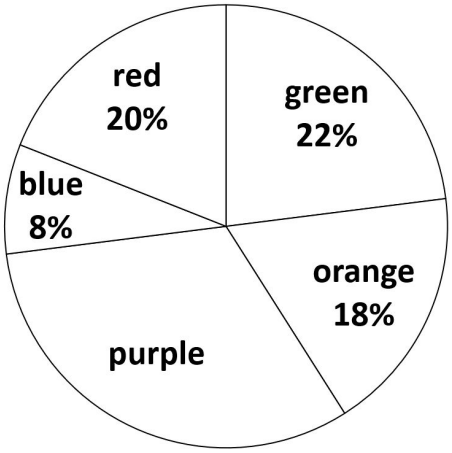
A3. Which of the following has the smallest value? Q3

A.	10% of 80	8
B.	20% of 60	12
C.	30% of 40	12
D.	50% of 20	10

A quick way of calculating 10% of a number is to divide it by 10. Then you can use this to find the other percentages e.g. double it for 20%, triple it for 30% etc.

A

A4. This pie chart shows the proportion of different coloured sweets in a bag of boiled sweets. In total 12 of the sweets were blue. How many of the sweets were purple? Q4



Firstly, calculate the percentage of purple sweets using the data on the pie chart: 100% - (8% + 20% + 22% + 18%) = 32%

12 sweet were blue which is 8% of the total sweets on the pie chart.

Using this information, calculate the value of 1% of the sweets: 8% = 12 sweets, therefore: 1% = 12 ÷ 8 = 1.5 sweets

So, if 32% of sweets were purple, the total number of purple sweets is:

32 x 1.5 = 48 sweets

48

A5. Write down all the numbers smaller than 50 which are multiples of both 4 and 6 Q5

Write down all the multiples of 4 below 50:

4 8 12 16 20 24 28 32 36 40 44 48

Then all the multiples of 6 below 50:

6 12 18 24 30 36 42 48

Now it is easy to tell which numbers are in both lists:

12, 24, 36, 48

A6. Tickets for a festival cost £5.80 for adults and £3.30 for children. How much would it cost for 2 adults and 3 children to go? Q6

Cost for 2 adults: £5.80 x 2 = £11.60

Cost for 3 children: £3.30 x 3 = £9.90

Total cost: £11.60 + £9.90 = £21.50

£21.50

Sandy Bay	7.15	7.30	7.45	8.00
Pierpoint	7.27	7.42	7.57	8.12
Whitesea Beach	7.48	8.03	8.18	8.33
Rockpool	8.08	8.23	8.38	8.53
Westleigh	8.45	9.00	9.15	9.30
Plympton Quay	9.09	9.24	9.39	9.54
Starhead Lighthouse	-	10.05	-	10.35
Benning Bay	-	10.38	-	11.08
The Shingles	-	10.58	-	11.28
Rocky Point	9.55	-	10.25	
Hunster	10.20	-	10.50	
Coombe	10.36	-	11.06	

A7. Ed needs to catch a bus from Pierpoint to Plympton Quay, arriving by 9.30am. What is the latest bus he could catch? Q7

The 7.27 and the 7.42 from Pierpoint both arrive in Plympton Quay by 9.30. The latest bus he could catch would be the 7.42.

7.42

A8. How long does Ed's journey take? Q8

The bus leaves Pierpoint at 7.42 and arrives in Plympton Quay at 9.24. That is 18 minutes + 1 hour + 24 minutes = 1 hour and 42 minutes

1 hr 42 mins

A9. Jana thinks of a number. She multiplies it by 8 and subtracts 5. The result is 51. What was Jana's original number? Q9

To solve this problem, work back from the answer, reversing all of Jana's steps.

Starting with 51 add on the 5 which Jana subtracted: 51 + 5 = 56.

Now divide 56 by the 8 which Jana multiplied: 56 ÷ 8 = 7

NB You can work forwards again to check your answer:

7

A10. Hattie has 3 pieces of wood. One is 32cm long, one is 180mm long and the other is 0.58m long. She lays them end to end. What is their total length in cm? Q10

To simplify the question, convert all of the lengths to the same units, for example centimetres before adding them:

32cm + 18cm + 58cm = 108cm

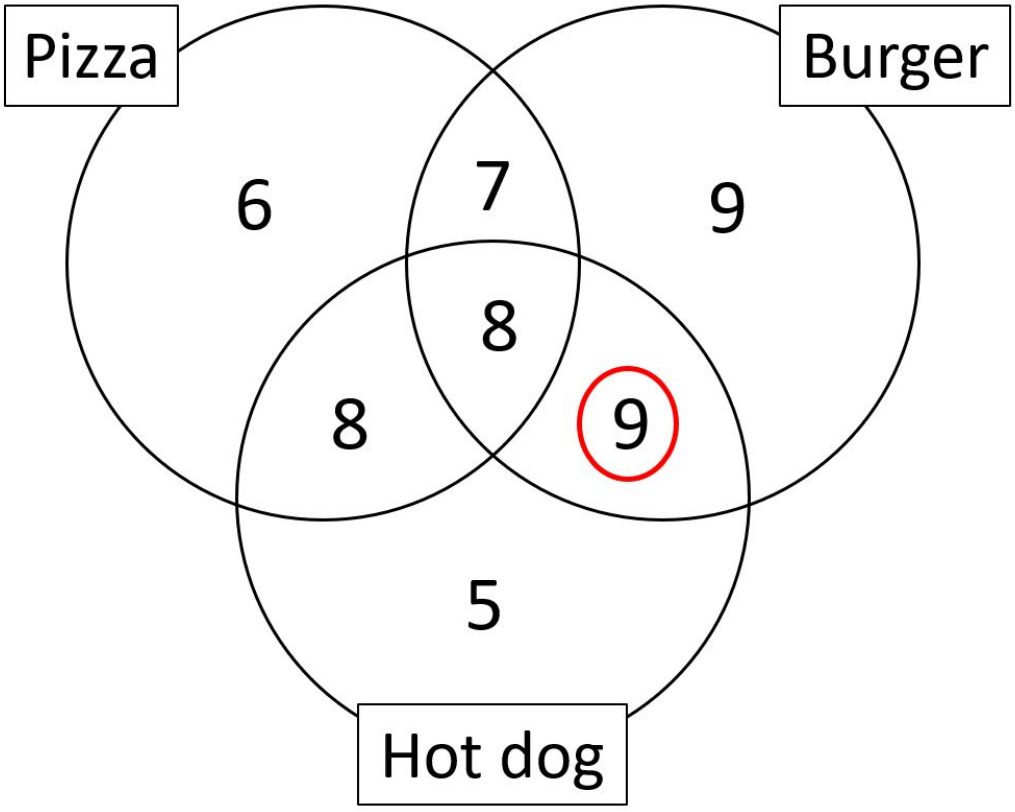
108cm

A11. There are 44 packets of crisps in a box. A supermarket buys 18 boxes. How many packets of crisps is this? Q11

18 x 44 = 792 packets of crisps

792

A group of office workers were asked which fast foods they liked. The Venn diagram below shows their preferences.



A12. How many liked Hot dogs and Burgers but didn't like Pizza? Q12

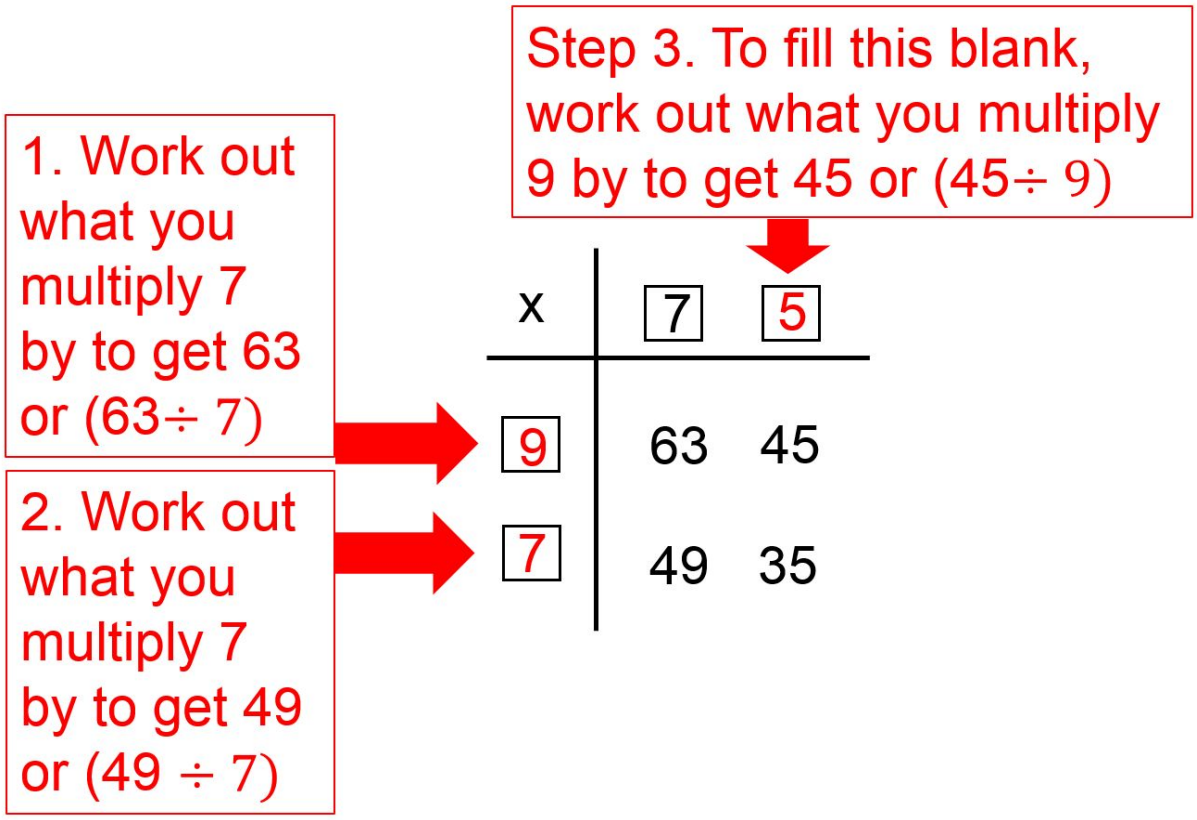
9

A13. How many eighths are there in 6? Q13

There are 8 eighths in one, so in 6 there must be 6 x 8 = 48 eighths.

48

A14. Write the missing numbers to make this multiplication grid correct.
Q14



A15. What is two-fifths of 45? Q15

$$\frac{2}{5} \text{ of } 45 =$$

$$\frac{2}{\cancel{5}_{1}} \times \frac{\cancel{45}^{9}}{1} = 18$$

You can simplify this sum by cross cancelling the denominator of the first fraction with the numerator of the second.

18

A16. Regan spends £2.05 on lunch each weekday. How much does she spend in a week. Q16

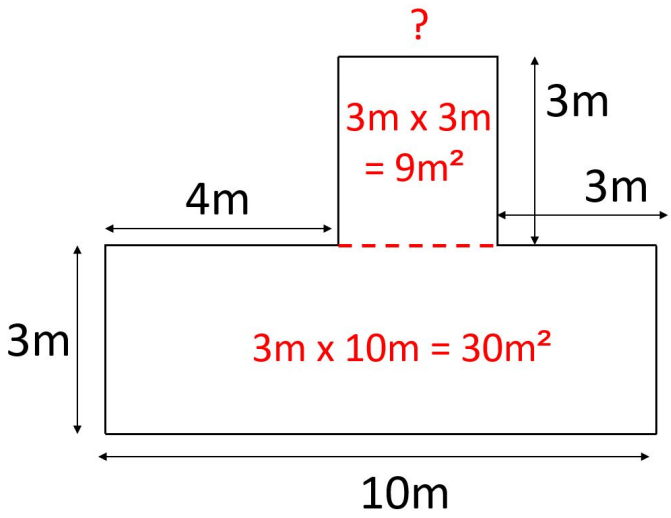
Weekdays are Monday through to Friday, so there are 5 weekdays in a week.

Regan spends:

£2.05 x 5 = £10.25

£10.25

The diagram below shows a plan of Oakhouse School's Library.



Not to Scale

A17. What is the area of the Library? Q17

First divide the area into two rectangles.

The area of the lower rectangle can be found by multiplying the length by the width 10m x 3m = 30m²

Calculate the missing length on the upper rectangle:10m – 4m -3m = 3m

Now, the area of the upper rectangle can be calculated by multiplying the length by the width: 3m x 3m = 9m²

Now add the areas of both rectangles: 30m² + 9m² = 39m²

39m²

A18. It costs £9 per a square metre to buy carpet for the library. How much will it cost in total? Q18

The area of the library calculated in the previous question is $39m^2$.

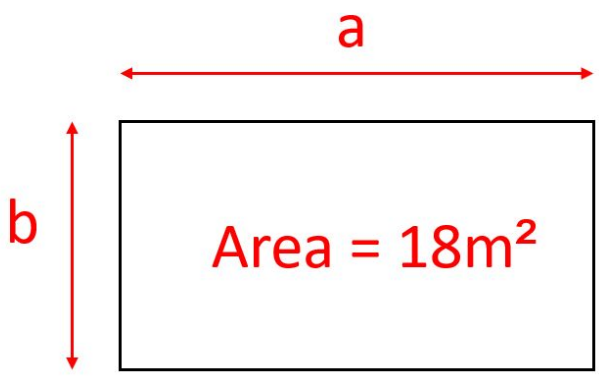
If carpet costs £9 per m^2 then it will cost:

39 x 9 = £351.00 for the carpet.

£351

A19. The area of a rectangular field is 18m². Which of the following could be its perimeter? Circle the correct answer Q19

18m 24m 20m 29m 9m



The area is found by multiplying the length by the width. So,

$$a \times b = 18m^2$$

To determine possible values of a and b, list the factors of 18 which, when multiplied together have a product of 18: 18 x 1, 9 x 2, 6 x 3.

The perimeter of the field can be found by adding the sides:

$$P = a + a + b + b$$

Put in the possible lengths to see which option tallies with the list of possible answers above:

18 + 18 +1 +1 = 38 9 + 9 + 2 + 2 =22m 6 + 6 + 3 + 3 =18m

The third option shows that if a = 6 and b= 3 the field's perimeter is 18m

A20. Two-thirds of a number is 54. What is the number? Q20

To find two–thirds of a number (n), you divide the number by 3 (denominator) and multiply by 2 (numerator).

In this case you need to work backwards to find what the original number (n) was, and to do this you need to divide the answer, 54, by 2 and multiply by 3.

$$\frac{2}{3}n = 54$$

Then:

$$n = \frac{3}{2} \times 54$$

$$n = \frac{3}{\cancel{2}_{1}} \times \frac{\overset{27}{\cancel{54}}}{1} = 81$$

81

A21. Which ratio is equivalent to 24 : 40? Circle the correct answer. Q21

Cancel down ratio in the same way as you cancel fractions.

$24 \div 8 = 3$ and $40 \div 8 = 5$

Therefore:

24 : 40 is equivalent to 3 : 5

a. 12 : 80

b. 24 : 48

c. 1 : 2

d. 3 : 5

e. 4 : 5

A22. A packet of Chewy Chews costs 32p. Bayley bought 6 packets to give to her friends. How much change did she get from £10.00? Q22

First work out how much Bayley spent on 6 packets of Chewy Chews:

32p x 6 = £1.92

Now subtract this from £10.00 to work out her change:

£10.00 - £1.92 = £8.08

£8.08

Success-Star Sports Shop has a 25% off sale.

Bilal buys a basketball hoop which normally costs £30.00

A23. How much did Bilal pay for the basketball hoop in the sale? Q23

25% is equivalent to one quarter.

To find a quarter of £30.00, divide by 4:

£30.00 ÷ 4 = £7.50

So, in the sale the price was reduced by £7.50

£30.00 - £7.50 =£22.50

£22.50

In her money box, Zhu has four 50p coins, six twenty pence coins, three 10 pence coins and five 5p coins.

A24. How much more does she need save to get to £5.00? Q24

Total how much money Zhu has in her money box:

(4x 50p) + (6 x 20p) + (3 x 10p) + (5 x 5p) = £3.75

Now subtract this amount from £5.00 to work out how much more she need to save:

£5.00 - £3.75 = £1.25

£1.25

A25. What fraction of a minute is 24 seconds? Write your answer in its lowest terms. Q25

There are 60 seconds in a minute, so 24 seconds as a fraction of a minute is:

$$\frac{24}{60}$$

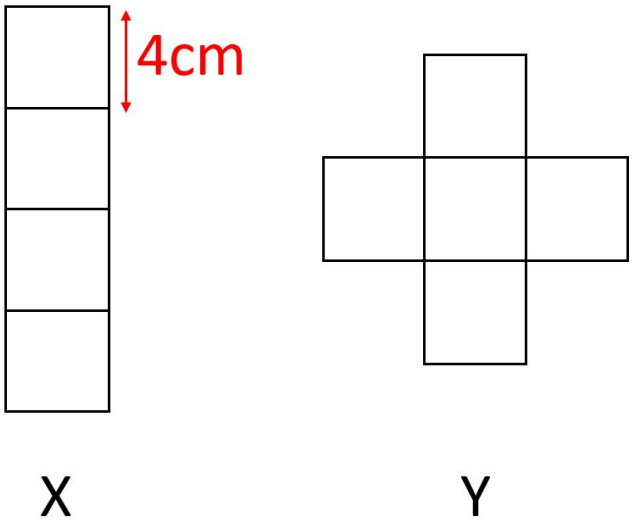
Divide the numerator and denominator by 12 to put this fraction into its lowest terms:

$$\frac{\overset{2}{\cancel{24}}}{\underset{5}{\cancel{60}}} = \frac{2}{5}$$

$$\boxed{\frac{2}{5}}$$

Shape X and shape Y are made up of identically sized squares. The perimeter of shape X is 40cm

A26. What is the perimeter of shape Y? Q26



If you count the number of sides of a small square which make up the perimeter of shape X, you will see that it is 10. The perimeter of shape X is given as 40cm, so each side of the small square must be:

$$40\text{cm} \div 10 = 4\text{cm}$$

Now if you count the number of sides of a small square which make up the perimeter of shape Y, you will see that it is 12. Each side of the small square is 4cm, so the perimeter is: 12 x 4cm = 48cm

48cm

A27. Write these numbers in order of size, starting with the largest. Q27

1.88 1.7 1.878 0.887

To order these numbers, start by looking at the whole numbers or units (digit before the decimal point). If the units digits are the same, look to the tenths (first digit after the decimal point), if still the same look at the hundredths (second digit after the decimal point) etc.

1.88	1.878	1.7	0.887

largest

If it helps. Write 1.88 as 1.880 and 1.7 as 1.700.

A28. If X is a whole number which is divisible by 3, 5 and 10, tick which of the following must also be divisible by 3,5 and 10? Q28

a. X + 15

b. X + 30 ✓

c. X + 40

d. X + 140

30 is the only number added to X which has factors of 3, 5 and 10.

In Year 6, 16% of the children have played football for the school. There are 125 children in Year 6.

A29. How many have not played football for the school? Q29

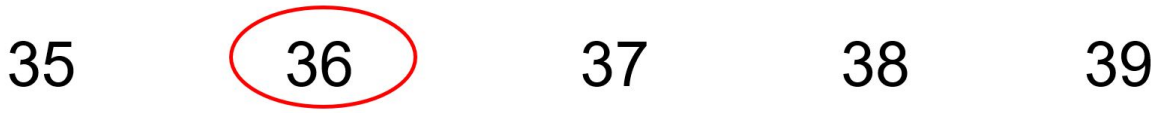
If 16% of children have played football for the school then 84% have not. Calculate 84% by expressing it as a fraction. You can then cross cancel to simplify the calculation.

$$\frac{\cancel{84}^{21}}{\cancel{100}_{4}_{1}} \times \cancel{125}^{5} = 105$$

105

A30. Circle which of the following numbers has an odd number of factors.
Q30

The factors of 36 are 1,2,3,4,6,9,12,18,36. It has an odd number of factors as 36 is a square number so one of its factor pairs is 6 x 6.



A set of drawing pencils costs £5.60 but in the sale it has 15% off.

A31. What is the sale price of the pencils? Q31

You can quickly find 10% of £5.60 by dividing by 10:

£5.60 ÷ 10 = 56p

If you half this, you will find 5% of £5.60:

56p ÷ 2 = 28p,

Therefore, altogether 15% of £5.60 is 56p+ 28p = 84p

So, the sale price of the pencils is:

£5.60 - £0.84 = £4.76

£4.76

Cinema tickets cost £8.30 for adults and £5.60 for children

A32. What is the maximum number of people who can go to the cinema for £40? Q32

Children have the cheapest ticket price, so to find the maximum number use the child ticket price.

You can quickly estimate the number of children who can get tickets for £40.00, by rounding the child ticket price to £5.

At £5, 8 children could attend as £5.00 x 8 - £40.00,

but as the ticket price is more than £5, only 7 can get tickets.

Check your estimate by multiplying the actual ticket price by 7:

£5.60 x 7 = £39.20

7

A33. Tick which one of the following is most likely the length of a car
Q33

a. 180mm

b. 4.5 m 

c. 190 cm

d. 5 feet

A box contains 6 red balls, 5 blue balls and 9 green balls. Tom pulls out a ball at random without looking.

A34. Circle the answer which shows the probability that it is blue. Q34

a. $\frac{3}{10}$ b. $\frac{5}{21}$ c. $\frac{1}{5}$ d. $\frac{1}{4}$

Firstly add to find the total number of balls in the box:

6 + 5 + 9 =20 balls.

Of the 20 balls in the box, 5 are blue so the probability of choosing a blue ball is:

$$\frac{5}{20}$$

This can be cancelled down as follows:

$$\frac{\overset{1}{\cancel{5}}}{\underset{4}{\cancel{20}}} = \frac{1}{4}$$

Angelo’s spelling test scores since the start of term are as follow:

20 18 17 20 14 17 13

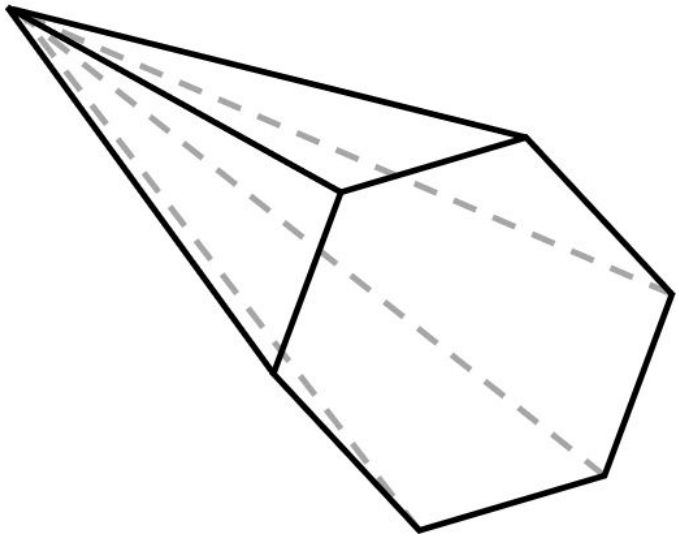
A35. What is Angelo’s median score? Q35

The median score is the middle score. To calculate the median, you need to write all the scores in order, lowest to highest, then determine which is the middle number:

13 14 17 (17) 18 20 20

17

A36. How many faces does a hexagonal pyramid have? Q36



7

Chan thought of a number. He subtracted 11 and then divided the answer by 9. The result was 9.

A37. What was the number Chan thought of? Q37

To solve the problem, you need to work backwards, performing the inverse of the operation Chan used.

Chan's result was 9 and just before obtaining this answer he had divided by 9 so you must do the inverse and multiply Chan's result by 9

$$9 \times 9 = 81$$

Before dividing, Chan had subtracted 11 from his original number so you must add 11

$$81 + 11 = 92$$

This step takes you back to the number Chan first thought of.

92

A38. Which number does X stand for in the Magic Square below? Q38

All rows, columns and diagonals in this square add up to 74.

26		13	
	21		18
19			
14		25	11

To find the first missing number in column 1, row 2, add the numbers in column one and subtract from 74.

$$74 - (14 + 19 + 26) = 15$$

Similarly, to find missing number in column 3, row 2:

$$74 - (15 + 21 + 18) = 20$$

The same method for column 3, row 3:

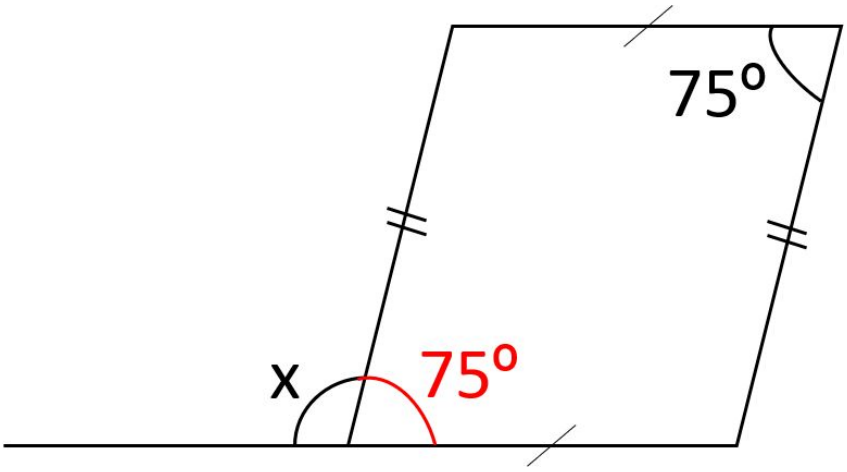
$$74 - (13 + 20 + 25) = 16$$

Now you can find X in the same way:

$$74 - (26 + 21 + 16) = 11$$

11

A39. What is the value of angle X? Q39



The shape on the line is a parallelogram.

In a parallelogram opposite angles are equal or congruent. The angle opposite the marked angle is therefore also 75°

Angles along a straight line add up to 180°

So, the value of x can be calculated by subtracting the known angle, 75° from 180°:

$$180^\circ - 75^\circ = 105^\circ$$

105°

The ratio of water to red dye in a solution is:

$$9 : 5.$$

A40. If there are 180ml of water in the solution, how many ml of dye are there? Q40

In the solution, 9 parts are water and this is equivalent to 180ml.

Firstly, calculate what one part of the solution is equal to, by dividing the amount in ml by 9:

$$180\text{ml} \div 9 = 20\text{ml}$$

The solution is 5 parts red dye, so if one part is equal to 20ml, five parts is:

$$5 \times 20\text{ml} = 100\text{ml}$$

100ml

Freddie is decorating cupcakes with chocolate buttons. He puts 6 on each cake. Altogether he has 230 chocolate buttons

A41. How may cupcakes can he decorate? Q41

To calculate how many cakes Freddy can decorate, divide the number of buttons by 6, the amount he puts on each cake:

$$230 \div 6 = 38 \text{ r } 2$$

Freddy can decorate 38 cakes and has two buttons left over.

38

A42. What is 3.143876 rounded to two decimal places Q42

To round to 2 decimal places, look at the third digit after the decimal point to decide whether to round up or down.

In this question, this digit is 3, and as this is less than 5, you will need to round down to 3.14.

3.14

A43. Round 77,595 Q43

To round to the nearest 10, look at the units digit 77,595. If it is 5 or above round up , 4 or less, round down.

to the nearest 10 77,600

To round to the nearest 100, look at the tens digit 77,595. If it is 5 or above round up, 4 or less, round down.

to the nearest 100 77,600

To round to the nearest 1000, look at the hundreds digit 77,595. If it is 5 or above round up, 4 or less, round down.

to the nearest 1000 78,000

There are 48 chocolates in a box. $\frac{1}{12}$ are white chocolate, $\frac{2}{3}$ are milk chocolate. The rest are plain chocolate.

A44. How many plain chocolates are there? Q44

Firstly, work out how many are white chocolates:

$$\frac{1}{12} \times 48 = 4 \text{ white chocolates}$$

Next work out how many are milk chocolates:

$$\frac{2}{3} \times 48 = 32 \text{ milk chocolates}$$

Now subtract to find how many are plain chocolates:

$$48 - (4 + 32) = 12 \text{ plain chocolates}$$

12

A regular pentagon has sides of 4cm.

A square has the same perimeter as this pentagon.

A45. What is the length of one side of the square? Q45

To work out the perimeter of the pentagon, multiply the length of one side by the number of sides (5).

$$4\text{cm} \times 5 = 20\text{cm}$$

This is also the perimeter of the square. A square has 4 equal sides so each side measures:

$$20\text{cm} \div 4 = 5\text{cm}$$

5cm

2,255 tickets for the Summer Fayre are printed.

1,472 have been sold.

A46. How many are still to be sold? Q46

Subtract the number sold from the number printed to determine how many are still to be sold:

2,255 – 1,472 = 783 tickets

783

A47. What is the sum of the factors of 24? Q47

The factors of 24 are:1,2,3,4,6,8,12 and 24

To find the sum, add them together.

60

Here is a rule for how long it takes to cook some meat.

Cooking time: 20 minutes
Plus an extra 40 minutes per kilogram.

A48. How many kilograms of meat takes 2 hours to cook? Q48

Two hours is equivalent to 120 minutes.

Firstly, take off the 20 minutes cooking time for the whole ham, so;

$$120 - 20 = 100 \text{ minutes}$$

Next, divide 100 minutes by the time it takes to cook 1kg, (40 minutes):

$$100 \div 40 = 2.5$$

2.5kg

A49. How many minutes will it take to cook 5kg of meat? Q49

Each kg takes 40 minutes to cook, so for 5kg: 40 **x** 5 = 200 minutes

Don't forget to add the 20 minutes:

200 + 20 = 220 minutes or 3hours 40 minutes

3 hr 40 mins

A tank holds 120 litres. Water is leaking out of it at a rate of 200ml a minute.

A50. How long will it take for the tank to empty? Q50

Change the capacity of the tank and the leak into the same units.

120 litres is equal to 120,000ml.

120,000 ÷ 200 = 600 minutes or 10 hours

10 hours

Three years ago, Amir was a quarter as old as his mum. Amir's mum is 39 years old.

A51. How old is Amir? Q51

Amir's mum is 39 years old, so three years ago, she was 36.

At this time, Amir was a quarter of her age, which you can find by dividing 36 by 4:

$$36 \div 4 = 9 \text{ years}$$

So, three years ago, Amir was 9 years old, which means that presently he is 12 years old.

12

In a tin of coloured beads, 18% are red. There are 350 beads altogether.

A52. How many are not red? Q52

You can calculate 18% of 350 using the following method:

$$\frac{18}{\cancel{100}\ 10} \times \frac{\cancel{350}\ 35}{1} = \frac{630}{10} = 63$$

If 63 are red, then subtract this amount from 350 to find out how many are not red:

350 – 63 = 287 beads

287

Justine has a bag of marbles. Ten are blue, nine are clear and six are green. She chooses one at random.

A53. What is the probability that she chooses one which is not blue? Circle the correct answer Q53

Count up how many marbles Justine has in total and how many are not blue:

Total marbles: 10 + 9 + 6 =25

Not blue: 9 + 6 = 15

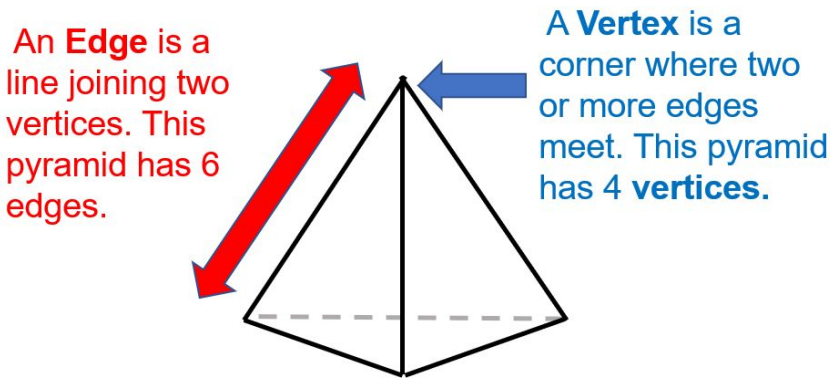
Now you can write a fraction to show the probability that the marble chosen is not blue and cancel it into its lowest terms:

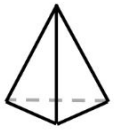
$$\frac{\overset{3}{\cancel{15}}}{\underset{5}{\cancel{25}}} = \frac{3}{5}$$

a. $\frac{2}{5}$ b. $\frac{15}{24}$ c. $\frac{3}{5}$ d. $\frac{10}{25}$

Here are diagrams of some 3-D shapes.

A54. Tick each shape which has the same number of vertices as edges. Q54





triangular based pyramid ☑ 4 faces, 4 vertices

triangular prism ☐ 5 faces, 6 vertices

square based pyramid ☑ 5 faces, 5 vertices

cube ☐ 6 faces, 8 vertices

Class 4 are going on a trip to a theme park. The total price is £26.75. This includes the bus fare, entrance fee and lunch. Lunch costs £5.75 and the bus fare is 50% of the entrance fee.

A55. How much is the entrance fee? Q55

Firstly, subtract the cost of the lunch from the total amount:

£26.75 - £5.75 = £21.00

Now the cost of the bus fare and entrance fee come to £21.00.

The question says that the bus fare is 50% or half of the entrance fee, or if we turn that around the entrance fee is double the bus fare.

You can write the relationship of the entrance fee to bus fare as a ratio of 2 : 1.

Add all the parts of the ratio 2+1 = 3 and divide this into the cost of the bus fare and entrance fee:

£21.00 ÷ 3 = £7.00

The bus fare is £7.00, and the entrance fee is double the bus fare so is £14.00.

£14.00

A56. Which of the following has the smallest value? Q56

a. 60% of 20 12

b. 50% of 30 15

c. 40% of 40 16

d. 30% of 50 15

You can find 10% of each amount quickly by dividing by 10. Then you can use this to calculate the other percentages e.g. multiply by 6 to get 60%, multiply by 4 to get 40% etc.

a

A57. James lives 4.8km away from Arjun. How far is that in metres? Q57

There are 1000m in one kilometre:

$$4.8 \times 1000 = 4{,}800\text{m}$$

4,800m

One kilometre is roughly five-eighths of a mile

A58. How many miles away from Arjun does James live? Q58

$$4.8 \times \frac{5}{8} =$$

$$\frac{\overset{0.6}{\cancel{4.8}}}{1} \times \frac{5}{\underset{1}{\cancel{8}}} = 3$$

3 miles

Hattie and Joe buy some daffodil bulbs.

Hattie buys a bag of 12 bulbs for £10.25

Joe buys 12 single bulbs for 95p each.

A59. How much more does Joe pay than Hattie? Q59

First work out how much Joe pays for his bulbs:

95p **x** 12 = £11.40

To find out how much more Joe pays, subtract how much Hattie paid from Joe's amount:

£11.40 – £10.25 = £1.15

£1.15

A piece of wood is 4m 8cm long. It is cut into 3 equal pieces.

A60. How much does each piece measure Q60

To make it easier to calculate the length of each piece, convert the length of the wood to cm

4m 8cm = 408cm

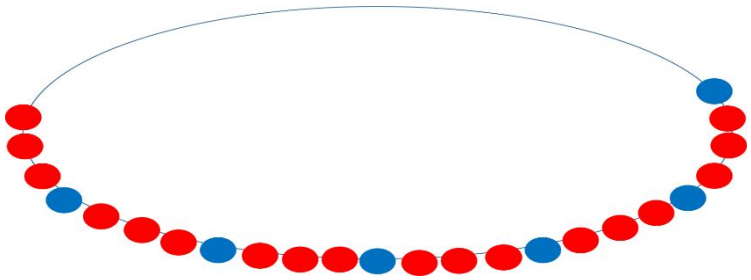
Next, divide this amount by 3 to find how much each piece measures:

408cm ÷ 3 = 136cm or 1.36m

136cm

Jan made a bracelet with red and blue beads. For every 4 beads she used, 3 were red. Altogether she used 18 red beads.

A61. How many beads did Jan's necklace have altogether? Q61

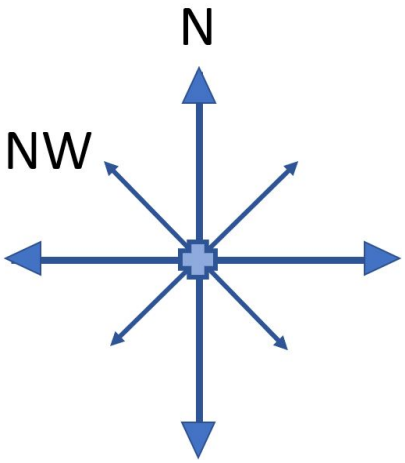


If it helps, draw a picture.

In each set of beads 3 are red and 1 is blue.

If Jasmine used 18 red beads, then she had 18 ÷ 3 = 6 sets of beads. There were 4 beads in each set, (3 red, 1 blue) and 6 sets so there were 6 **x** 4 = 24 beads altogether

24



Ewan faces North West then turns 225º clockwise

A62. Which direction is Ewan facing now? Q62

A half turn is 180º, so Ewan turned one half turn plus another 45º, to make 225º in total.

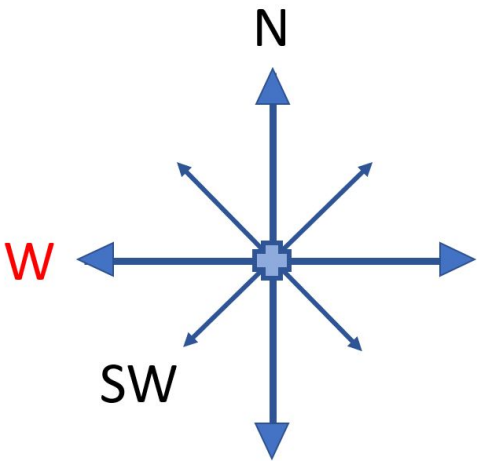
The half turn clockwise (same direction as the clock hands move) would leave Ewan facing South East.

Then he turns 45º (half of a right angle) further in a clockwise direction. This leaves Ewan facing South.

South

Alicia turns a quarter turn clockwise and then 135º anti-clockwise. She ends up facing South-West.

A63. Which direction was Alicia facing at the beginning? Q63



Start at South West and work backwards through the instructions, reversing them.

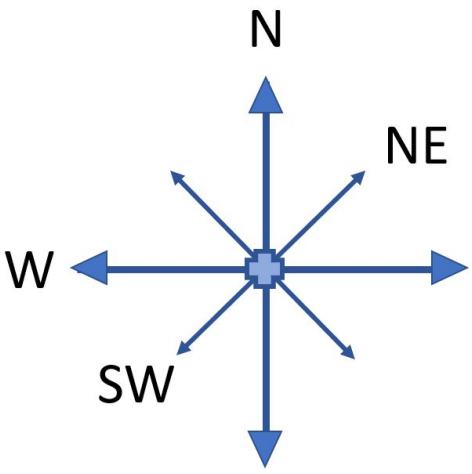
First, turn 135º clockwise (direction the clock hands go), and Alicia will be facing North.

Next, turn a quarter turn anti-clockwise, (opposite direction to clock hands) and Alicia will be facing West.

West

Hanai faces North-East and turns clockwise until she faces West.

A64. How many degrees does she turn through? Q64



If Hanai turns clockwise from North-East to South-West she turns through 180º. If she continues to turn from South-West to West she turns another 45º so altogether she turns:

$$180º + 45º = 225º$$

225°

John writes the following equation.

$$C = \frac{3}{7} B$$

He uses it to write four more but one of the four is incorrect.

A65. Circle the incorrect equation below. Q65

a. $7C = 3B$

b. $3C = 7B$

c. $B = \frac{7}{3} C$

d. $\frac{C}{B} = \frac{3}{7}$

John's original equation was:

$$C = \frac{3}{7} B$$

To find 3C you must multiply both sides of the equation by 3:

$$3C = \frac{9}{7} B$$

When you do this you can see that 3C is not equal to 7B.

A66. Write the next two numbers in the following sequence. Q66

1 4 16 64 256 1024

Each number in the sequence is found by multiplying the previous number by 4.

A67. Write the next two numbers in the following sequence. Q67

6 10 18 34 66 130

The sequence is increasing by double the previous increase.

Between 6 and 10 an increase of 4,

Between 10 and 18 an increase of 8,

Between 18 and 34 an increase of 16,

Between 34 and 66 an increase of 32 etc.

Mrs. Sood gives out stars for good work in her class. Her box contains gold, silver and bronze stars and she chooses them at random, without looking.

The box contains 21 silver stars and 12 gold stars.

The probability that she chooses gold is 1/4

A68. How many bronze stars are in the box? Q68

As there is a 1/4 chance that Mrs. Sood chooses a gold star. This means that one-quarter of the stars must be gold.

If there are 12 gold stars, then there must be 12 x 4 = 48 stars altogether.

To find how many of the 48 are bronze, you must subtract the number of silver and gold stars:

48 – 21 – 12 = 15 bronze stars

15

In a carpark, 18% of cars are white. If there are 150 cars in the carpark.

A69. How many are **not** white? Q69

If 18% of the cars are white, then 82% are not white.You can calculate 82% of 150 as follows:

$$\frac{82}{100} \times 150 =$$

$$\frac{\overset{41}{\cancel{82}}}{\underset{1}{\cancel{100}}} \times \frac{\overset{3}{\cancel{150}}}{1} = 123$$

You can cross cancel the fractions as shown to make your calculation simpler.

123

You need 4 eggs to make a sponge cake.

A70. How many sponge cakes can be made with 8 dozen eggs? Q70

Calculate how many eggs are in 8 dozen by multiplying by 12:

$$8 \times 12 = 96 \text{ eggs}$$

Next divide the number of eggs by 4 to find how many cakes you can make with 96 eggs:

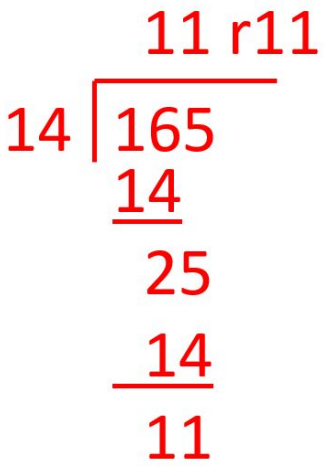
$$96 \div 4 = 24 \text{ cakes}$$

24

Betty needed 165 small prizes for “Lucky Dip” stall.The prizes came in packs of 14.

A71. How many packs did Betty need to buy? Q71

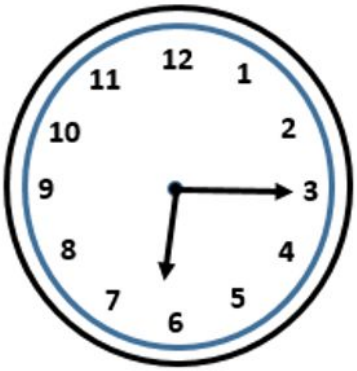
You will need to do a long division calculation to find how many packs of 14 will be needed for 165 prizes:



So, for 165 prizes Betty will need to buy12 packs (and she will have 3 prizes left over).

12

A72. How many degrees does the minute hand turn through from 5 o'clock to quarter past 6? Q72



One full turn has 360˚

A quarter turn is 90˚ (360˚ ÷ 4 = 90˚)

So 360˚ + 90˚ = 450˚

A73. Round 5.324585 to two decimal places. Q73

To round 5.324585 to two decimal places, look at the third digit after the decimal point. In this case the digit is 4 so the number will be rounded down to 5.32.

Had the third digit been a 5 or over the number would have been rounded up to 5.33.

5.32

Harry thinks of a number and calls it **x.**

If Harry adds 8 to **x** and multiples the answer by 3 he gets the same answer as he would if he had just multiplied **x** by 7.

A74. What is the value of **x**? Q74

Write Harry's calculations as an equation:

Firstly, Harry adds 8 to x and multiplies the answer by 3. You can write this as 3(x + 8).

We are then told that this amount is equal to x multiplied by 7 which we can write as 7x.

So now we can write the equation:

$$3(x + 8) = 7x$$

Multiply what is inside the brackets by 3:

$$3x + 24 = 7x$$

Get rid of the 3x by subtracting 3x from each side of the equation:

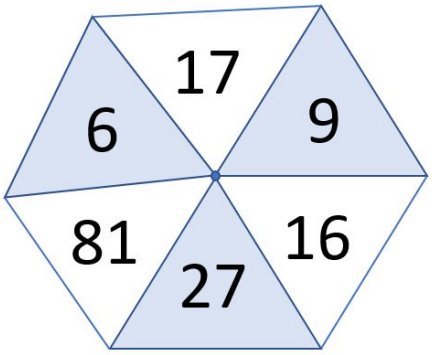
$$24 = 4x$$

Divide each side of the equation by 4 to find the value of x:

$$x = 6$$

6

Serena spins this spinner:



A75. Tick which outcome is most likely. Q75

There are 6 sections on the spinner or 6 possible outcomes.

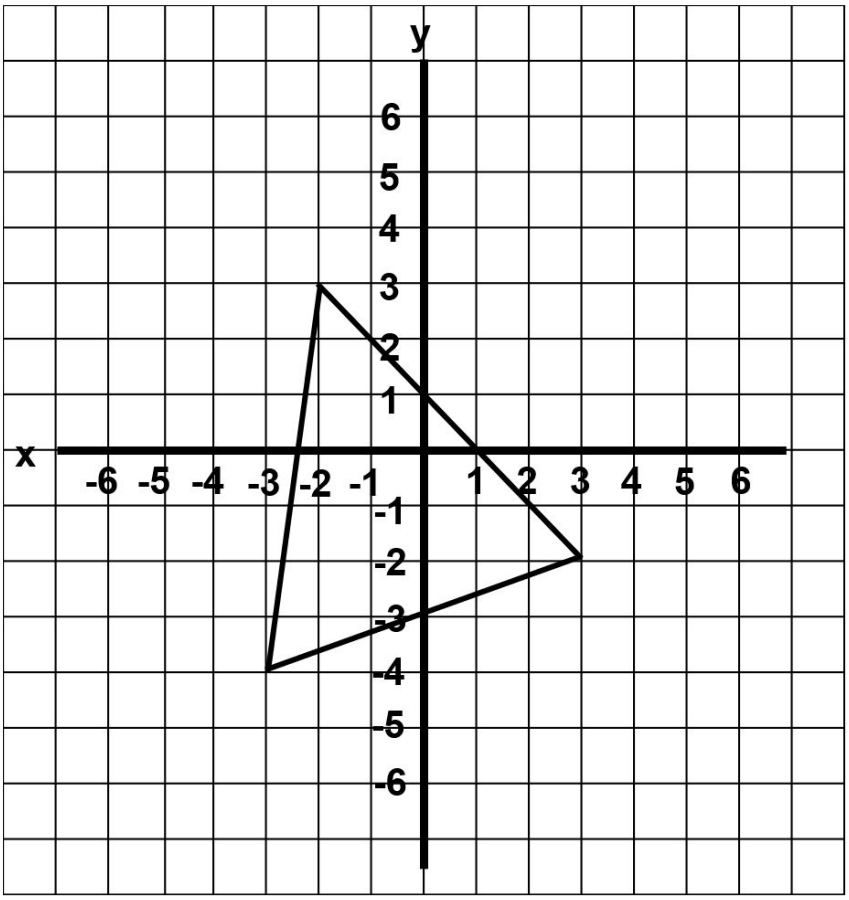
a. The spinner lands on an even number.
   6 and 16 are even; probability $^{2}/_{6}$

b. The spinner lands on a prime number.
   17 is a prime number; probability $^{1}/_{6}$

c. The spinner lands on a multiple of 3.
   6, 9, 27 and 81 are multiples of 3; probability $^{4}/_{6}$

d. The spinner lands on a number less than 10.
   6 and 9 are less than 10; probability $^{2}/_{6}$

A76. Write down the coordinates of the vertices of this triangle. Q76



Remember to write the x-axis coordinate first, then the y-axis coordinate.

(-2,3) (3,-2) (-3,-4)

Carmelita gets on a coach at 11:15 am and arrives at her destination at 3:25pm.

A77. How long is Carmelita's journey? Q77

11:15am to 12:00pm is 45 minutes

12:00pm to 3:25pm is 3 hours 25 minutes.

If you add these together you get 3 hours and 70 minutes which is equal to 4 hours, 10 minutes.

4 hr 10 mins

In summer in Sweden, there is daylight for **18 hours** each day.

A78. For what percentage of the day is there daylight? Q78

Sweden's daylight as a fraction is $\frac{18}{24}$

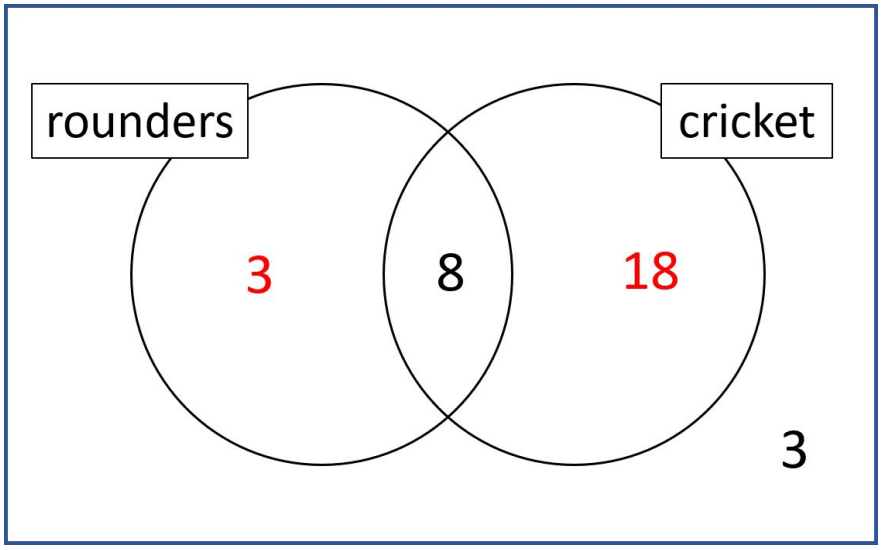
or in its lowest form, $\frac{3}{4}$ or 75%

To work out $\frac{3}{4}$ as a percentage multiply it by 100:

$$\frac{3}{4} \times \frac{100}{1} = \frac{300}{4} = 75\%$$

75%

This Venn diagram shows the number of children in Class 3 who like rounders or cricket. Three children like neither. Class 3 has 32 pupils.



A79. If 11 children like rounders, how many like cricket? Q79

There are 32 children in the class and 3 don't like rounders or cricket so if you deduct them right away, you are left with 29 children.

Of the 29, 11 children like rounders. Looking at the Venn Diagram, you can see that 8 of these children like cricket too, so there are just 3 children who like only rounders. If you deduct these 3 children from the 29 who like rounders or cricket you will see that 26 like cricket, (8 who like rounders too and 18 who only like cricket).

26

A80. How many children liked only one sport? Q80

The question tells us that 11 children like rounders, but we can see from the middle section of the Venn Diagram that 8 of these also like cricket, so:

$$11 - 8 = 3 \text{ children like only rounders.}$$

In the previous question we worked out that 26 children like cricket, but the middle section of the Venn Diagram again tells us that 8 of these like rounders too, so:

$$26 - 8 = 18 \text{ children like just cricket.}$$

Altogether, the number that like only one sport, either rounders or cricket is:

$$3 + 18 = 21 \text{ children.}$$

21

Harvey buys three pints of milk. He pays with a £20 note. His change is £18.08

A81. What is the cost of one pint of milk? Q81

First work out how much the three pints of milk cost by taking Harvey's change away from the amount he paid. £20.00

£20.00 – £18.08 = £1.92 for three pints.

To find out how much one pint costs, divide your answer by 3:

£1.92 ÷ 3 = £0.64

64p

Wes chose a number between 1 and 30. He doubled it and added 2. The answer was 40.

A82. What number did Wes start with? Q82

Work backwards reversing the operations that Wes did.

Wes had an answer of 40 and before getting the answer he had added 2, so firstly subtract the 2 from 40:

$$40 - 2 = 38$$

Prior to this, Wes doubled his number, so you need to half 38 to find out the original number:

$$38 \div 2 = 19$$

You can check your answer by following Wes' steps with the number 19.

19

A83. What is the value of **y** in the following equation? Q83

$$4y - 3 = 51 - 2y$$

Firstly, remove the -2y by adding 2y to each side of the equation:

$$6y - 3 = 51$$

Next, remove the -3 adding 3 to each side of the equation:

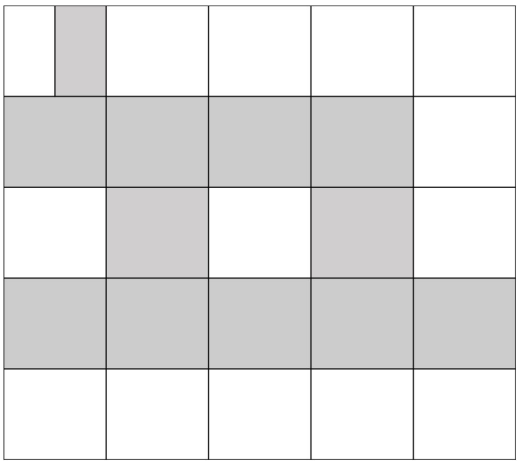
$$6y = 54$$

Now find the value of y by dividing each side of the equation by 6:

$$y = 9$$

9

A84. What percentage of this square is shaded? Q84



11.5 out of 25 squares are shaded.

You can write this as a fraction, doubling each number to get rid of the decimal:

$$\frac{23}{50}$$

Now, multiply by 100 to convert to a percentage:

$$\frac{23}{\cancel{50}_{1}} \times \frac{\cancel{100}^{2}}{1} = 46\%$$

46%

A bus leaves the bus station for Hemmingford every 8 minutes and for Ivybridge every 6 minutes. A bus for Hemmingford and a bus for Ivy bridge both leave the bus station at 10am.

A85. What is the next time a bus for Hemmingford and a bus for Ivybridge will leave at the same time? Q85

To work out the next bus, you will need to find the lowest common multiple of 8 and 6:

Multiples of 6: 6,12.18, 24 ……

Multiples of 8: 8, 16, 24……

Lowest common Multiple: 24

So, 24 minutes after the 10 o'clock buses leave at the same time, two more will leave together.

10:24am

A shopping bag has a mass of 4.8 kilograms. Of this, 1.6kg are potatoes.

A86. What fraction of the total mass is made up of potatoes. Circle the correct answer. Q86

a. $\frac{8}{23}$ b. $\frac{7}{26}$ c. $\frac{1}{4}$ d. $\frac{1}{3}$

Write a fraction by putting the weight of potatoes as the numerator and the total weight of the shopping as the denominator. You can get rid of the decimals by multiplying both the numerator and denominator by 10. Next cancel down to find the fraction in its lowest terms:

$$\frac{1.6}{4.8} = \frac{\overset{2}{\cancel{16}}}{\underset{6}{\cancel{48}}} = \frac{1}{3}$$

A87. Circle which of the following is most likely to be the mass of a bag of sugar? Q87

a. 20g

b. 200kg

c. 2kg

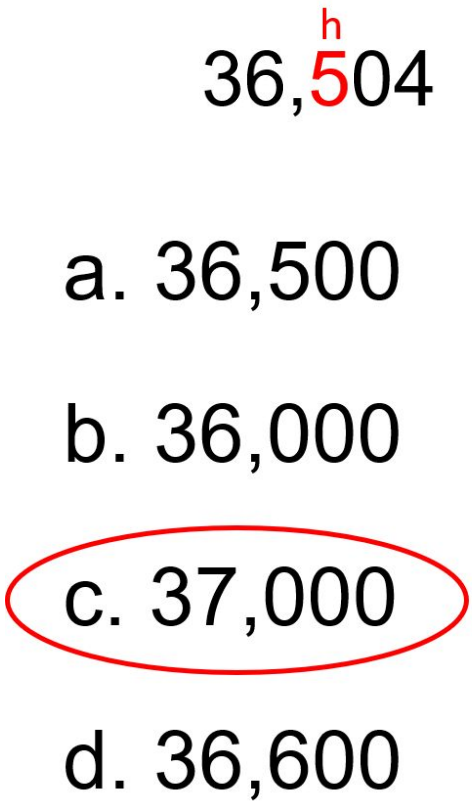
d. 20 litres

20g is about the mass of a mouse, 200kg is around the mass of two large men and 20 litres is a measure of capacity not mass, so the correct answer is 2kg.

Thirty-six thousand, five hundred and four people attended the cup final.

A88. What is this rounded to the nearest thousand? Circle the correct answer. Q88

To decide whether to round up to 37,000 or down to 36,000, look at the digit in the hundreds column. If this is 5 hundred or over round up, 4 hundred or under round down.



The average monthly temperatures in ºC in Paphos are as follows:

14 14 15 18 21 24 26 27 25 23 18 15

A89. What is the mean average monthly temperature? Q89

To find the mean average, add up all of the temperatures:

14 + 14 +15 + 18 + 21 + 24 + 26 + 27 + 25 + 23 +18 + 15 = 240

Now divide this by the number of average monthly temperatures, in this case 12:

240 ÷ 12 = 20º C

20° C

A90. What is the range of temperatures? Q90

The range is the difference between the highest and lowest temperature. The highest temperature is 27º C and the lowest is 14º C, so the difference is:

$$27º\ C - 14º\ C = 13º\ C$$

13° C

On a map, 1cm represents 15km.

The distance between London and Liverpool is 360km.

A91. On the map, what is the distance in centimetres between the two cities? Q91

To find the distance in cm on the map, divide the distance in km between London and Liverpool by 15km (which is 1cm on the map):

360km ÷ 15 = 24cm

24cm

Hope has a job in a toy shop. She earns £8.50 and hour and receives 5% of the cost of any toys she sells. On Monday, Hope worked for 8 hours and sold £120 worth of toys.

A92. How much did Hope earn on Monday? Q92

Hope worked for 8 hours on Monday at a pay rate of £8.50 an hour so she earned:

£8.50 x 8 = £68.00

She also sold £120 worth of toys for which she received 5% of the cost. You can find 10% of £120 quickly by dividing by 10 to give £12.

Then you can half £12 to find 5%.

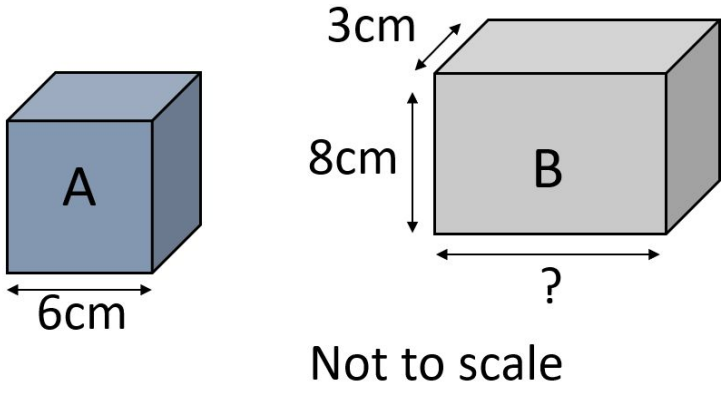
So 5% of £120 is £6.

Add this amount to the amount Hope earned for the hours she worked and you have her total pay for Monday:

£68.00 + £6.00 = £74.00

£74.00

A93. The volume of the cube and cuboid below are identical. What is the missing length of the cuboid Q93



The formula for finding the volume of a cube or cuboid is:

Volume = Length x Width x Height

On a cube, all of the sides are equal so its volume is:

$6cm \times 6cm \times 6cm = 216cm^3$

For the cuboid, you now have its volume and the length of two sides:

$3cm \times 8cm \times ? = 216cm^3$

Or: $24cm^2 \times ? = 216cm^3$

To find the missing length (?) divide $216cm^3$ by $24cm^2$

$216cm^3 \div 24cm^2 = 9cm$

9cm

A94. Circle which of the following times is quarter to six in the morning
Q94

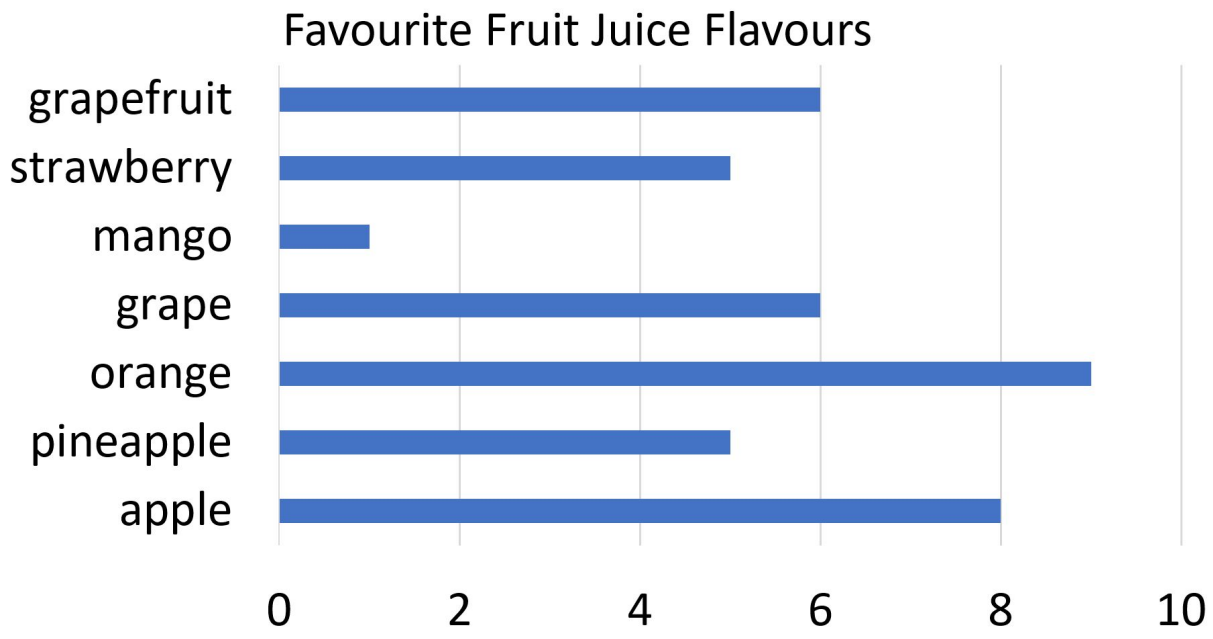
a. 17:45

b. 05:45

c. 06:15

d. 18:45

The chart below shows the favourite fruit juice flavours of a group of adults.



A95. How many adults chose a favourite flavour altogether? Q95

Add up all the flavours chosen on the chart to find how many adults chose a flavour altogether:

6 + 5 + 1 + 6 + 9 + 5 + 8 = 40 adults

40

A96. What fraction of adults chose apple flavour? Q96

From the chart you can see that 8 adults chose apple flavour out of the 40 adults who chose a favourite.

You can write this as a fraction, then cancel it down to its lowest terms by dividing the numerator and denominator by 8:

$$\frac{\overset{1}{\cancel{8}}}{\underset{5}{\cancel{40}}} = \frac{1}{5}$$

$$\boxed{\frac{1}{5}}$$

The formula for converting temperatures in degrees Celsius (**C**) to degrees Fahrenheit (**F**) is:

$$F = \frac{9}{5}\,C + 32$$

A97. What is 10 degrees Celsius in Fahrenheit? Q97

Put 10º into the formula in the place of C:

$$F = \frac{9}{5}x10 + 32$$

$$F = \frac{90}{5} + 32$$

$$F = 18 + 32$$

$$F = 50°$$

50° F

Tara wrote down her last 5 test scores, but one accidentally got erased.

Her scores were 78, 89, 96, 82 and X (the missing score).

Her mean average score was 83.

A98. What was Tara's missing score, X? Q98

To find the mean average, you need to add up all of Tara's scores and divide them by the number of scores which in this case is 5. The question tells us that the mean average of Tara's scores is 83, so you can write this as an equation as follows:

$$(78 + 89 + 96 + 82 + X) \div 5 = 83$$

Now you can simplify this:

$$(345 + X) \div 5 = 83$$

Get rid of the ÷5 by multiplying both sides of the equation by 5:

$$345 + X = 415$$

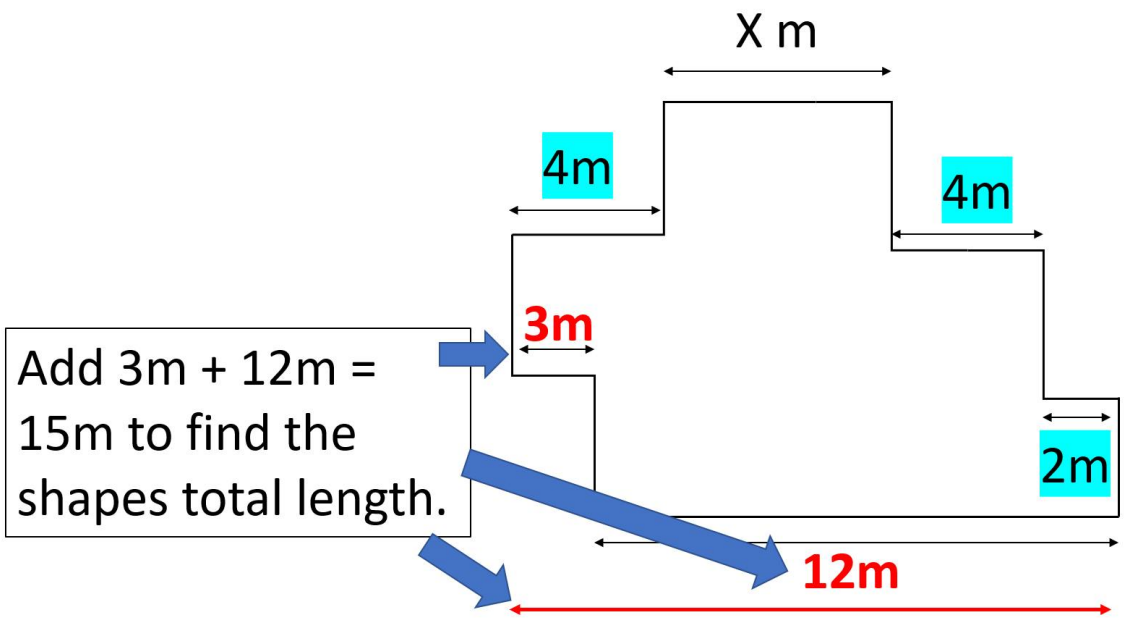
Remove the 345 by subtracting 345 from both sides of the equation:

$$X = 70$$

This leaves you with X, Tara's missing score is 70.

70

A99. Calculate length X. Q99



Next, subtract the highlighted lengths to find the value of X:

15m – 4m - 4m – 2m = 5m

5m

Kahlil did his homework from 4:45pm to 6:20pm. For a fifth of that time he was studying maths.

A100. How long did Kahlil spend studying maths? Q100

Work out how long Kahlil spent doing his homework in minutes:

4:45 to 5:00 is 15 minutes

5:00 to 6:00 is 60 minutes

6:00 to 6:20 is 20 minutes

So, altogether Kahlil spent 95 minutes doing his homework.

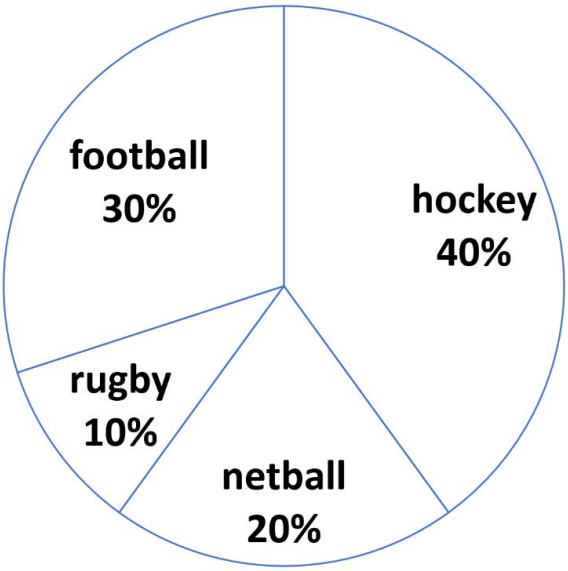
For one fifth of that time, Kahlil was studying maths:

$$\frac{1}{5} \text{ of } 95 =$$

$$\frac{1}{5} \times \frac{95}{1} = \frac{95}{5} = 19 \text{ minutes}$$

19 minutes

This pie chart shows which sport 120 children chose to play on a Wednesday afternoon at Linford School.



A101. How many children chose to play hockey? Q101

From the pie chart you can see that 40% of the 120 children chose to play hockey.

You can find 10% of 120 quickly by dividing by 10:

120 ÷ 10 = 12 children

Now you can easily multiply this by 4 to find 40% of 120:

12 x 4 = 48 children chose hockey.

48

About the Author

A.L. Brown has been a teacher for many years…… but before that she was a kid who had to take a thousand exams. She found that the only route to exam success was to make sure she was totally prepared for what was coming. That is why she has written this 11 plus revision guide with loads of practice questions to prepare you to sit your Grammar School Entrance Exam with confidence.

With plenty of practice of the sorts of questions which appear time and again on the exam paper, your confidence will soar, and you will be able to achieve you best on exam day.