

A1

Multiply the first five square numbers, then add on the first ten prime numbers.

B1

The integers from 1 to 10 are written down as words in English. Multiply the number of times the letter E will appear by the total number of letters.

A2

If a can of cat food costs \$2.88 after a 20% increase, what would the cost be if the original price were instead decreased by 20%?

B2

Find the difference between the sum of the first 5 square numbers and the sum of the first 10 prime numbers.

A3

The imperial system of measuring length is such that 12 inch = 1 foot, 3 feet = 1 yard and 1760 yards = 1 mile.

Ericka and Valeria are running an endurance race.

Ericka manages to run 24 miles 860 yards 2 feet 11 inches.

Valeria manages to run 28 miles 700 yards 3 feet and 9 inches.

Find the total distance that the two girls ran.

B3

A farmer grows 322 kg of rice. He sells his rice in bags of three different sizes: 5 kilogram, 7 kilogram and 1 kilogram.

The farmer sells the same amount of 5 kilogram and 7 kilogram bags. He sells twice as many 1 kilogram bags as the number of 5 kilogram bags.

Assuming he sells all the bags, how many bags did the farmer sell altogether?

A4

Terry the Tiger had a bag of cherries. He gave $\frac{1}{2}$ of the cherries to Tony, then $\frac{1}{3}$ of the remaining cherries to Tina, then $\frac{1}{4}$ of the cherries that were leftover to Tricia.

After all this Terry realizes that he has been left with 18 more cherries than Tina.

How many cherries were there altogether?

B4

Mr Foster asked the children in his class to open their maths books to the facing pages which multiply to make 650.

To which pages should the children open their books?

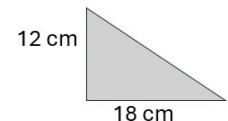
A5

Sally earns \$45,000 per year before tax. The first \$12,500 of each person's earnings are tax free.

If Sally has to pay 20% tax how much does she earn each year after tax?

B5

A floor is to be tiled with triangular shaped floor tiles. Each triangular tile is right-angled with a base of 18 cm and a height of 12 cm.



The tiles are used to tile a room that is 5.4 m long and 3.6 m wide. Exactly $\frac{1}{4}$ of the tiles are to be red.

What is the total area of all the red tiles?

A6

The size of a crowd is 32,345 people.

Catherine rounds the number to the nearest ten and then tells this rounded number to Marco. Marco rounds the number Catherine tells him to the nearest hundred and tells Lucy his rounded number.

Pauline rounds 32,345 to the nearest thousand and tells Lucy. Lucy adds together the numbers Marco and Pauline have told her and then reduces the total by 10%.

What is Lucy's final result?

B6

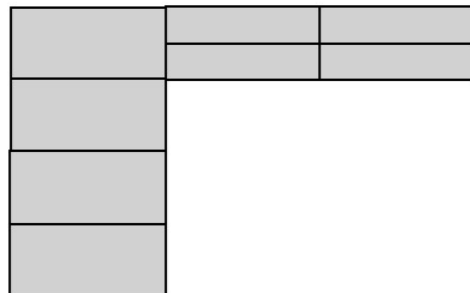
A swimming pool has a length of 50 m, a width of 25 m and a depth of 2 m. If the pool is 90% full of water, find the volume of water in litres.

A7

Ken gets his hair cut every 20 days. Larry gets his hair cut every 26 days. Ken and Larry get their hair cut on the same Tuesday. What day of the week is it the next time they get their hair cut on the same day?

B7

How many rectangles of any size are in this diagram?



A8

Multiply the number of edges of a cube by the number of faces of a square-based pyramid, then divide by the number of vertices of an octagonal prism. Give your answer as a decimal.

B8

A letter is picked at random from the word SHANGHAI and then rubbed out. Find the probability that exactly four of the letters left have one line of symmetry.

A9

A square has three vertices at $(1, 1)$, $(6, 4)$, and $(5, 0)$. Find the coordinates of the centre of the square.

B9

A snail is in a well that is 300 cm deep.
Every day the snail climbs up 13 cm, but then he slips back 6 cm.

After how many days will the snail be out of the well?

A10

Four different numbers have a median of 15.5 and mean of 17.5.

All the numbers are triangle numbers.

Find the four numbers.

B10

The number 2026 is one more than a square number (2025) and one less than a prime (2027).

Find the largest number which is less than 2026, and is one more than a square number and one less than a prime number.

A11

Ziyu creates a sequence by starting with the number 3 and then repeatedly adding on 5.

Sol creates a sequence by starting with the number 1 and then repeatedly adding on 6.

How many numbers less than 500 will be in *both* Ziyu's sequence and Sol's sequence?

B11

A tap drips water. Each drip is exactly $1\frac{2}{5}$ ml. The tap releases two drips every second.

How many litres of water will drip from the tap in a week?

A12

What is $\sqrt{16\%} - 4\%$?

B12

Dorothy, Emily and Fiona have a mean age of 14 years.
Emily and Fiona have a mean age of 16 years.
Dorothy's sister Gertrude is half Dorothy's current age.
How old will Gertrude be in 9 years?

A13

Find the value of 🗨️ + 📞 + ❤️ + 🍕 + 🧦, given that:

$$6 \text{ 🗨️} + \text{📞} = 52$$

$$\text{📞} = \text{🗨️} \div 2$$

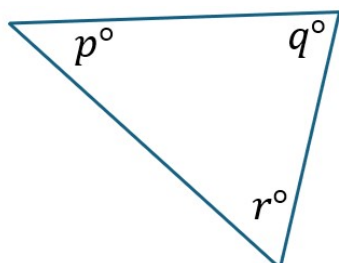
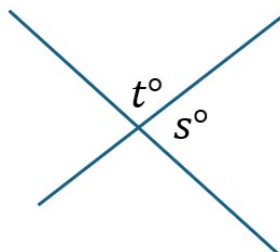
$$\text{❤️} - 3 \text{ 🍕} = \text{🗨️}$$

$$\text{❤️} + \text{🧦} = 30$$

$$\text{❤️} - \text{🧦} = 16$$

B13

What is the mean of p,q,r,s and t?



A14

Jennie and Lisa both bought the same type of computer. Jenny paid $\frac{1}{5}$ less than the original price of the computer and paid \$1440. Lisa paid $\frac{2}{3}$ less than the original price of the computer.

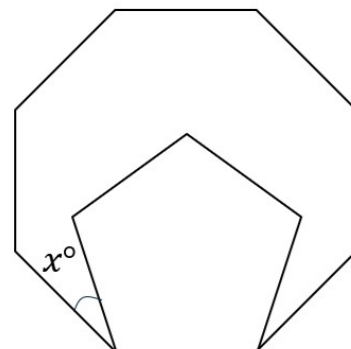
Lisa didn't like her computer and sold it to Jisoo for 10% less than she paid for it.

How much did Jisoo pay for the computer?

B14

The diagram below shows a regular octagon and a regular pentagon with a common side.

Find the size of the angle x° marked .



A15

Arnold, Benjamin and Colin share \$5,600,000. For every \$2 Arnold gets, Benjamin gets \$3. For every \$1 Benjamin gets, Colin gets \$3. How much does Arnold receive?

B15

Nandita, Leo, Fiona, Kelvin and Rahul all stand in a line. In how many ways can they stand in a line if Nandita and Leo stand next to each other?

A16

If 12 men and 10 women can complete a job in 15 days, how many days will it take for 30 men and 25 women to complete the same job?

B16

A rectangle has width 20cm and length 30cm. Another rectangle is such that its width and length are 10% larger than the width and length of the first rectangle. Find the area of the larger rectangle.

A17

The number 5 can be written as the sum of two different square numbers.

How many numbers smaller than 30 can be written as the sum of two or more different square numbers?

B17

A football tournament is organized with 40 teams. Each team starts by playing in one of eight groups, each of five teams. The five teams in each group will play each other once.

The top two teams of each group will then enter the second group phase which consists of 4 groups, with each team in the group playing each other once.

The top team in each of the four groups are organized into two semi-finals, whoever wins each semi-final (no draws are allowed) will play in the final.

How many games will there be in the tournament altogether?

A18

You roll two eight-sided dice each of which has faces numbered 1, 2, 3, 4, 5, 6, 7 and 8. What is the probability that one of the dice you have rolled has a score exactly double the score on the other dice?

B18

If $\frac{1}{6}$ is $\frac{1}{2}$ of $\frac{3}{4}$ of a certain number, what is that number?

A19

A train travels at a constant speed. It passes a pole in 8 seconds. It passes a 400 metre long platform in 28 seconds.

How long is the train?

B19

A three digit number ' abc ' (where a is the hundreds digit, b is the tens digit and c is the units digit) satisfies the following two properties:

a , b and c are all different digits
' abc ' is equal to $a! + b! + c!$

Note: $!$ means factorial, e.g. $7! = 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$

Find ' abc '.

A20

If $2^x + 2^x + 2^x + 2^x = 2^{16}$, find the value of x .

B20

Using each of the numbers 1, 2, 3, 4, 5 exactly once and the operations +, −, × and ÷ exactly once (no other operations including brackets are allowed), what is the largest value you can make?

A21

A *Shirley Temple* drink can be made by mixing ginger ale, cherry juice and orange juice in the ratio 16 : 3 : 2.

If you have 320 ml of ginger ale, 51 ml of cherry juice and 40 ml of orange juice, what is the maximum amount of *Shirley Temple* drink you can make?

B21

A train ticket from New York City to Chicago costs \$340.69.

Due to increases in fuel costs the price is due to rise by 3.4%.

How much will the train ticket cost after the increase? Give your answer correct to 2 decimal places.

A22

A room is 9 metres long, 8 metres wide and 4.4 metres high.

Jake wants to fill the room with identical boxes that should all be in the same orientation. Each box measures 60 cm by 45 cm by 25 cm.

What is the maximum number of boxes than can be fit into the room?

B22

In a football league teams get 3 points for winning a game, 1 point for drawing and 0 points for losing.

Melchester Rovers have played 20 games and scored 38 points. Given that they have lost less than 5 games, write all the possibilities for the number of games that Melchester Rovers could have won.

A23

A bike wheel has a radius of 80 cm. During a journey the wheel revolves 120 times. Find the total distance of the journey in metres. (Use π to 2 decimal places).

B23

I am a three digit number.

All my digits are different.

My tens digit and my units digit in that order form a two-digit number that is a multiple of my hundred digit number.

My hundreds digit and my tens digit in that order form a two-digit number that is a multiple of my units digit number.

The sum of my digits is 17.

My smallest digit is my tens digit.

What number am I?

A24



Crack the code:

___ _ _

- Hints:
- 291 One number is correct and in the right place.
 - 245 One number is correct but in the wrong place.
 - 463 Two numbers are correct but in the wrong place.
 - 569 One number is correct but in the wrong place.
 - 578 Nothing is correct

B24

A bag contains red, green, blue and yellow balls.

A third of the balls are red. The number of green balls is exactly half the number of red balls. There are three times as many yellow balls as there are blue balls.

Find the minimum number of yellow balls.

A25

If a clock shows 2:30, what will be the angle between the hour and minute hands?

B25

How many positive integers less than 1,000 have a digit sum of 6?

A26

Two numbers in the 4x4 grid can be swapped to create a Magic Square (in which all rows, columns and both main diagonals add up to the same total).

What is the sum of the two numbers?

9	6	3	16
4	13	10	5
14	1	8	11
7	12	15	2

B26

Only one of the following statements is true. Which is it?

- A 'B is true'
- B 'E is false'
- C 'Statements A to E are true'
- D 'Statements A to E are false'
- E 'A is false'