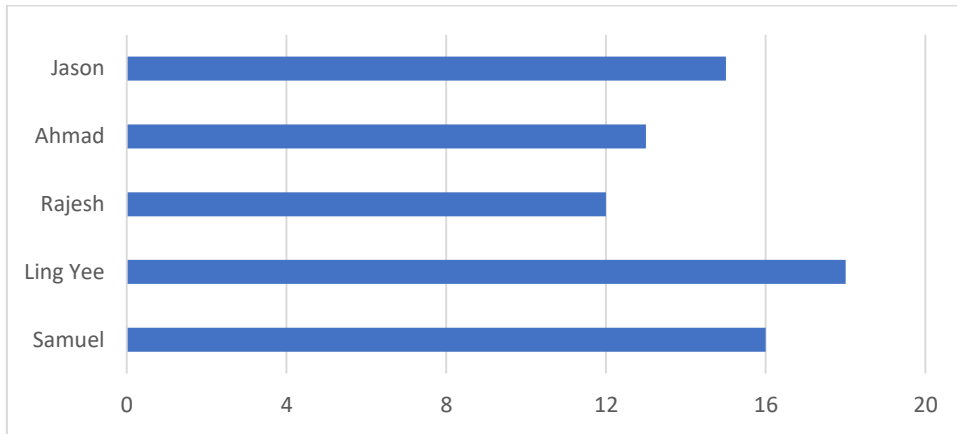


Paper 1 (80 marks)



1.

The graph above shows the number of hours 5 students spend listening to music each day.

a) Who listens to the greatest number of hours?

Answer: [1]

b) How many more hours did Samuel listen to music than Rajesh?

Answer: [1]

2

a) Express 420 as a product of its prime numbers.

Answer: [1]

b) Write down the smallest positive integer, k , such that $420k$ is a perfect cube.

Answer: [1]

3

- a) What is the speed of a car if it takes 6 hours to travel 489 kilometres?

Answer: [1]

- b) What is the speed of the same car in m/s?

Answer: [1]

4

- a) Express 18% as a decimal.

Answer: [1]

- b) Express 36 as a percentage of 50.

Answer: [1]

5.

Solve the inequality $4x + 3 \geq 11$.

Answer: [2]

6.

Solve $\frac{4}{3y} - 4 = 3$.

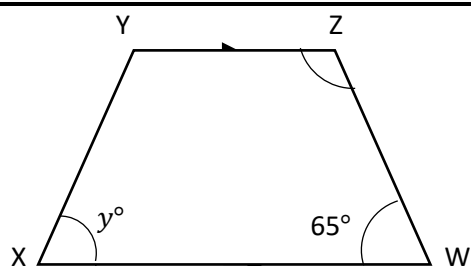
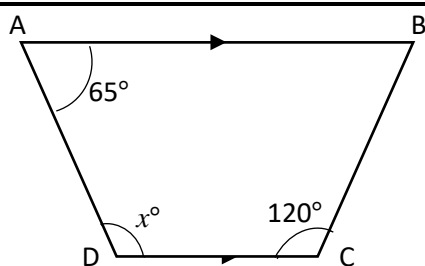
Answer: [2]

7.

Make m to be the subject of this formula.

$$\frac{2}{m - 3x} = y$$

Answer: [2]



8.

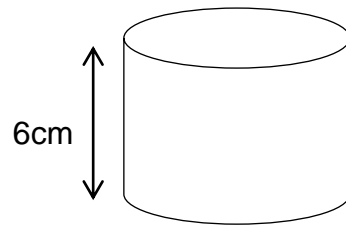
These trapeziums ABCD and WXYZ are congruent to each other.

a) Find the value of x .

Answer: [1]

b) Find the value of y .

Answer: [1]



9

Calculate the total surface area of the cylinder with radius and height of 6cm.

Answer: [3]

10.

Solve these simultaneous equations.

$$3x + 5y - 11 = 0$$

$$6x + 7y - 16 = 0$$

Answer: $x = \dots\dots\dots$

$y = \dots\dots\dots$ [2]

11

a) Write as a single fraction in its simplest form $\frac{3}{x-2} + \frac{2}{x+2}$.

Answer: [2]

b) Simplify $\frac{2xy+4y}{2xy+6y}$.

Answer: [1]

12.

Given that d is directly proportional to the square root of t .

a) Given that $d = 8$ when $t = 4$, find d when t is 16.

Answer: [1]

b) Find the value of t when $d = 20$

Answer: [2]

13.

The ratio of the number of red marbles to green marbles was 2 : 5. The total number of marbles was 49.

a) How many red marbles were there?

Answer: [1]

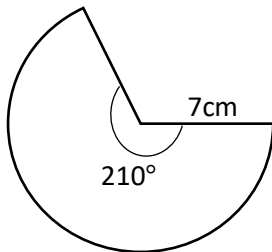
b) When a number of red marbles was added, the new ratio of the red marbles to green marbles was now 8 : 5.

How many red marbles were added?

Answer: [2]

14.

Calculate the perimeter of a sector of a circle of radius 7cm and angle 210° .



Answer:cm [3]

15.

a) Evaluate 7^{-3} .

Answer: [1]

b) Given that $8^{\frac{4}{3}} = 2^y$, find y .

Answer: [2]

16.

The table below shows the weekly number of hours of overtime done by the workers of a company.

No of hours (Overtime)	Number of workers
$0 < x \leq 5$	5
$5 < x \leq 10$	12
$10 < x \leq 15$	40
$15 < x \leq 20$	28
$20 < x \leq 25$	8
$25 < x \leq 30$	7

- a) Find the percentage of employees who did overtime less than or equal to 10 hours per week.

Answer: [1]

- b) Find the median.

Answer: [1]

- c) Calculate an estimate of the mean number of overtime hours of the workers.

Answer: [2]

17.

Factorise

a) $2z^2 + z - 10$

Answer: [2]

b) $10ax + 4ay + 15bx + 6by$

Answer: [2]

18.

a) A map has a scale of 1 : 200 000. The distance between two cities on the map is 8cm. Calculate the actual distance, in kilometres, between the two cities.

Answer:km [2]

b) A reservoir on the same map covers an area of 14km². Calculate the area, in square centimetres, covered by the reservoir on the map.

Answer:cm² [2]

19.

a) Solve $x^2 - x - 6 = 0$

Answer: $x = \dots\dots\dots$ or $\dots\dots\dots$ [2]

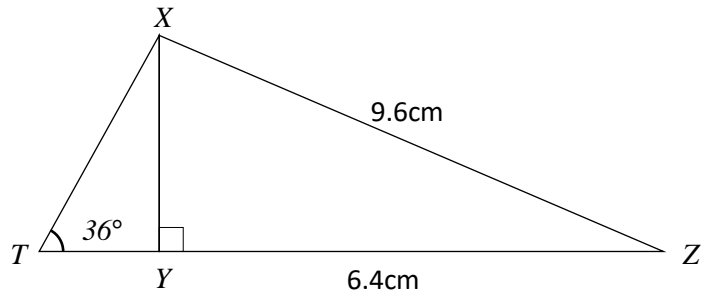
b) $x^2 - 2x - 6 = (x + a)^2 + b$

By completing the square, determine the values of a and b .

Answer: $a = \dots\dots\dots$ & $b = \dots\dots\dots$ [2]

20.

The figure below is made up of two triangles. Triangles TXY and ZXY . In triangle TXY , angle $XTY = 36^\circ$. Y is a point on TZ such that XY is perpendicular to TZ . $YZ = 6.4\text{cm}$ and $XZ = 9.6\text{cm}$.



a) Find angle YXZ .

Answer [2]

b) Find the length of TX .

Answer [2]

21.

a) Calculate the gradient of the line joining the points (3,4) and (-1,1).

Answer: [2]

bi) Find x given that point (6 , 8) and (x , 11) has the same gradient as (3 , 4) and (-1 , 1)

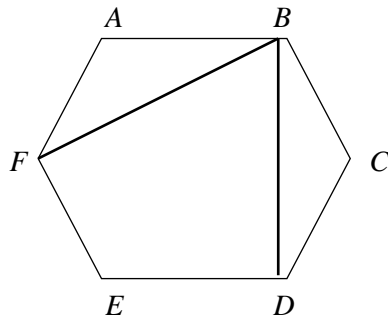
Answer: $x =$ [2]

bii) If the line cuts the y -axis at the co-ordinates $(0, \frac{7}{4})$, determine the equation of this line.

Answer: $x =$ [2]

22.

The figure shows a regular hexagon, $ABCDEF$.



a) Find angle FBA .

b) What is a special name given to triangle FAB.

Answer [3]

c) Find angle FBD .

Answer: [1]

Answer[2]

23.

Adilah, Adib and Ah Seng have different methods to buy a computer that costs \$2800.

- a) Adilah paid for the computer in cash and was given a discount. Calculate the percentage discount that she received given that she paid \$2380 for the computer.

Answer: [2]

- b) Adib paid an initial deposit of \$400 and paid the rest in monthly instalments of \$150 for a period of 2 years. How much did Adib actually pay for the computer?

Answer: [2]

- c) Ah Seng decided to take a bank loan to pay for the computer. He has to pay back the loan completely by 2 years. The bank charges a compound interest of 2.5% compounded yearly. Calculate total amount Ah Seng had to pay for the computer.

Answer: [2]

24.

a) Find the radius of a sphere that has a surface area of 255cm^2 .

Answer: [2]

b) Find the volume of the same sphere.

Answer: [2]

c) The sphere is then melted and formed into a cube. Find the length of a side of the cube.

Answer: [2]
