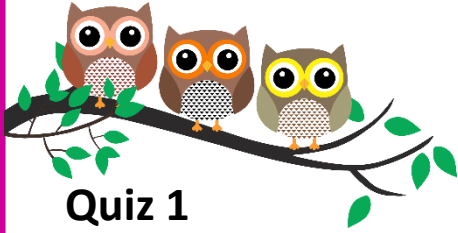


Higher Interleaving Quiz

Answers

Branch 2

Quizzes 1 to 3



Home Study Focus

Quiz 1

Q	Topic	Σ	R	A	G
1	Product of Prime Factors				
2	Forming and Solving Equations				
3	Right Angled Trigonometry				
4	Mean from a Table				

Home Study Completed

Quiz 2

Q	Topic	Σ	R	A	G
1	Compound Interest				
2	Simultaneous Equation				
3	Area Problem				
4	Probability Tree				

Home Study Completed

Quiz 3

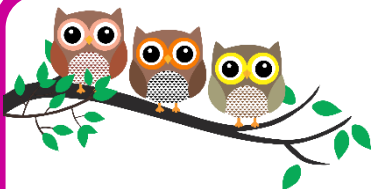
Q	Topic	Σ	R	A	G
1	Compound Interest				
2	Forming and Solving Equations				
3	Transformations				
4	Cumulative Frequency				

Home Study Completed



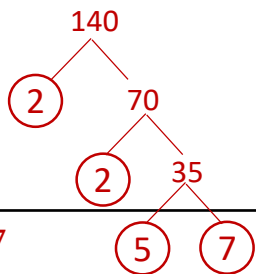
Higher Interleaving Quiz

Answers



Branch 2 Quiz 1

1) Express 140 as a product of its prime factors in index form. (3 marks)

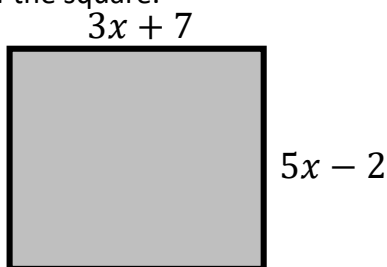


$$2 \times 2 \times 5 \times 7$$

Answer: $2^2 \times 5 \times 7$

2) The diagram shows a square. (4 marks)

All lengths are measured in centimetres. Use an algebraic method to find the length of one side of the square.



$$5x - 2 = 3x + 7 \quad L = 3(4.5) + 7$$

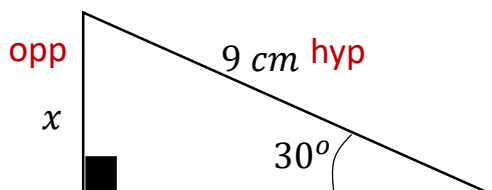
$$2x - 2 = 7 \quad L = 13.5 + 7$$

$$2x = 9 \quad L = 20.5$$

$$x = 4.5$$

Answer: 20.5cm

3) Work out the length of x (3 marks)



$$\sin(30) = \frac{1}{2} \quad x = 9 \times \sin 30$$

$$\sin(30) = \frac{x}{9} \quad x = 9 \times \frac{1}{2}$$

Answer: 4.5 cm

4) The times that 50 customers waited in a drive-thru.

Time (t) in mins	Frequency	Mp	Fx
$0 < t \leq 2$	3	1	3
$2 < t \leq 4$	14	3	42
$4 < t \leq 6$	21	5	105
$6 < t \leq 10$	8	8	64
$10 < t \leq 16$	4	13	52
	50		266

a) Calculate an estimate for the mean time. (3 marks)

$$266 \div 50 = 5.32$$

Answer: 5.32 mins

b) The manager of the drive-thru says, "80% of our customers wait less than 6 minutes." Does the data support this statement? You must show your working. (2 marks)

$$21 + 14 + 3 = 38$$

$$\frac{38}{50} = \frac{76}{100}$$

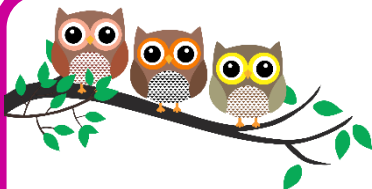
$$\frac{76}{100} \times 100 = 76\%$$

No only 76% of people wait less than 6 mins, this is 4% less.

Q	Topic	Σ	R	A	G
1	Product of Prime Factors				
2	Forming and Solving Equations				
3	Right Angled Trigonometry				
4	Mean from a Table				

Higher Interleaving Quiz

Answers



Branch 2 Quiz 2

1) Sarah invested £8500 for 5 years.
It earned compound interest at 1.5% per annum.

a) Sarah is trying to work out the total interest earned.

$$8500 \times 1.5 \times 5$$

State what is wrong with Sarah's method. (2 marks)

For **just** the interest the multiplier should be 0.015, (or 1.015 for increased amount), not 1.5.

It should be to the power of 5 not times 5.

b) Work out the total interest earned after 5 years. (2 marks)

$$8500 \times 0.015^5 = 656.914033$$

Answer: **£656.91**

2) Solve

$$\begin{aligned} 5x + 4y &= 7 \\ 2x + 4y &= -2 \end{aligned} \quad (3 \text{ marks})$$

ST OP

$$3x = 9$$

$$x = 3$$

$$5x + 4y = 7$$

$$5(3) + 4y = 7$$

$$15 + 4y = 7$$

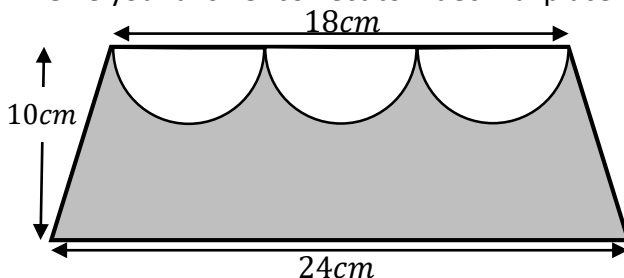
$$4y = -8 \quad y = -2$$

$$x = \quad \quad \quad \mathbf{3}$$

$$y = \quad \quad \quad \mathbf{-2}$$

3) The diagram shows a trapezium and three identical semicircles. (4 marks)

Work out the area of the shaded region.
Give your answer correct to 1 decimal place.



$$\text{Diameter} = 18 \div 3 = 6\text{cm}$$

$$\text{Radius} = 3\text{cm}$$

$$\text{Area circle} = \pi \times 3^2 = 9\pi = 28.274 \dots$$

$$\text{Area semicircle} = 4.5\pi = 14.137 \dots$$

$$\begin{aligned} \text{Area 3 semicircles} &= 4.5\pi \times 3 \\ &= 14.137 \times 3 = 42.4115 \dots \text{cm}^2 \end{aligned}$$

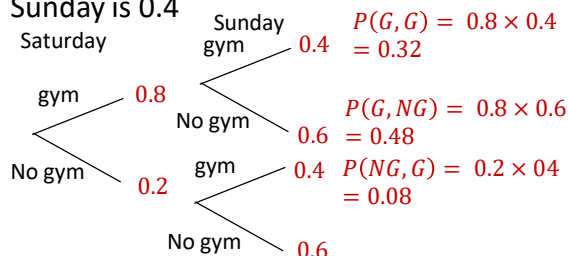
$$\text{Area Trapezium} = \frac{18+24}{2} \times 10 = 210\text{cm}^2$$

$$\text{Area shaded} = 210 - 42.4115 \dots = 167.6\text{cm}^2$$

Answer: **167.6cm²**

4) The probability that Ollie goes to the gym on a Saturday is 0.8

The probability that Ollie goes to the gym on a Sunday is 0.4



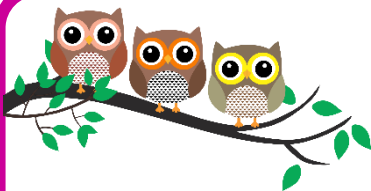
a) Calculate the probability Ollie goes to the gym on a Saturday and a Sunday. (1 marks)

$$0.8 \times 0.4 \quad \text{Answer: } \quad \mathbf{0.32}$$

b) Calculate the probability Ollie goes to the gym on exactly one of these days. (3 marks)

$$0.48 + 0.08 \quad \text{Answer: } \quad \mathbf{0.56}$$

Q	Topic	Σ	R	A	G
1	Compound Interest				
2	Simultaneous Equation				
3	Area Problem				
4	Probability Tree				



Higher Interleaving Quiz

Answers

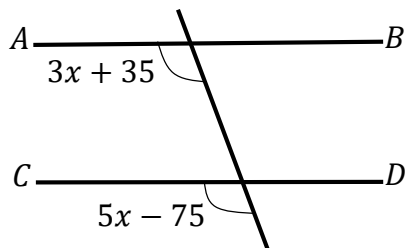
Branch 2 Quiz 3

- 1) Mo invests £16,750 for 3 years at 1.4% per year compound interest. **(3 marks)**
Work out the value of the investment at the end of 3 years.

$$16750 \times 1.014^3$$

Answer: **£17463.39**

- 2) AB and CD are parallel lines. **(3 marks)**
Work out the value of x .



$$5x - 75 = 3x + 35$$

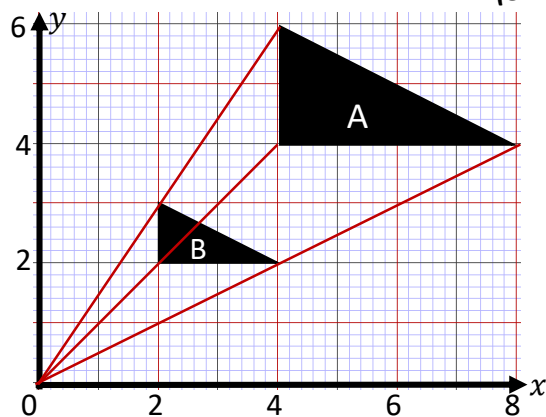
$$2x - 75 = 35$$

$$2x = 110$$

$$x = 55^\circ$$

Answer: **$x = 55^\circ$**

- 3) Describe fully the transformation of A onto B **(3 marks)**



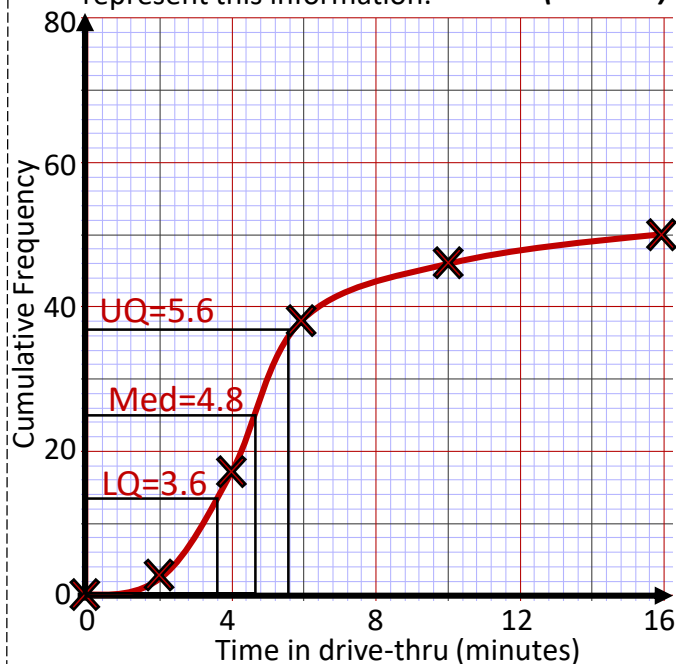
Enlargement, Scale factor = $\frac{\text{new}}{\text{old}} = \frac{2}{4} = \frac{1}{2}$

Centre (0,0)

- 4 The times that 50 customers waited in a drive-thru are given in the frequency table.

Time (t) in mins	Frequency	Time (t) in mins	CF
$0 < t \leq 2$	3	$0 < t \leq 2$	3
$2 < t \leq 4$	14	$0 < t \leq 4$	17
$4 < t \leq 6$	21	$0 < t \leq 6$	38
$6 < t \leq 10$	8	$0 < t \leq 10$	46
$10 < t \leq 16$	4	$0 < t \leq 16$	50

- a) Draw a cumulative frequency graph to represent this information. **(3 marks)**



- b) Use your graph to find an estimate for the interquartile range. **(3 marks)**

$$5.6 - 3.6 = 2$$

Answer: **$IQR = 2 \pm 0.4$**

Q	Topic	Σ	R	A	G
1	Compound Interest				
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