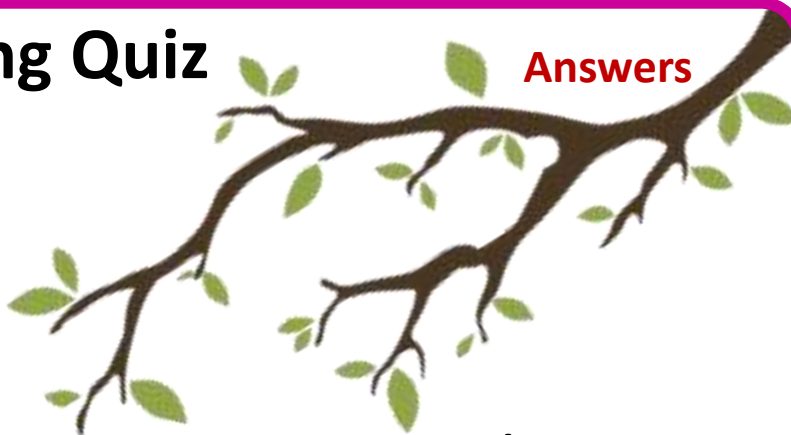
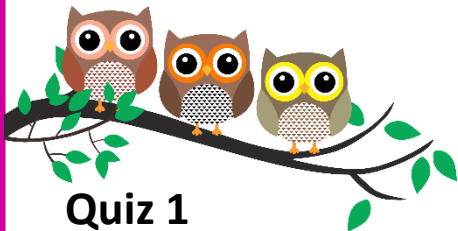


Higher Interleaving Quiz

Answers

Branch 1

Quizzes 1 to 3



Quiz 1

Q	Topic	Σ	R	A	G
1	Product of Prime Factors				
2	Difference of Two Squares				
3	Area Problem				
4	Cumulative Frequency				

Home Study Focus

Home Study
Completed

Quiz 2

Q	Topic	Σ	R	A	G
1	Ratio Problem				
2	Expand and simplify				
3	Right Angled Trigonometry				
4	Cumulative Frequency				

Home Study Focus

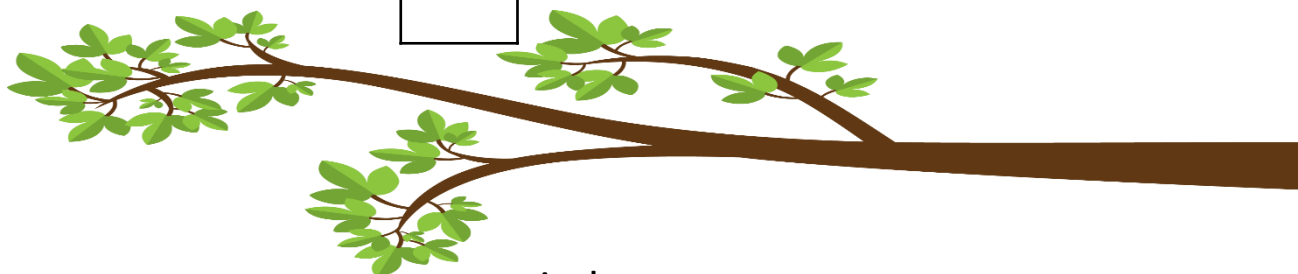
Home Study
Completed

Quiz 3

Q	Topic	Σ	R	A	G
1	Ratio Problem				
2	Functions				
3	Volume and Mass				
4	Mean from a Table				

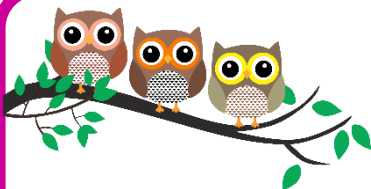
Home Study Focus

Home Study
Completed



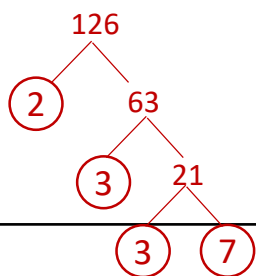
Higher Interleaving Quiz

Answers



Branch 1 Quiz 1

1) Express 126 as a product of its prime factors in index form. (3 marks)



$$2 \times 3 \times 3 \times 7$$

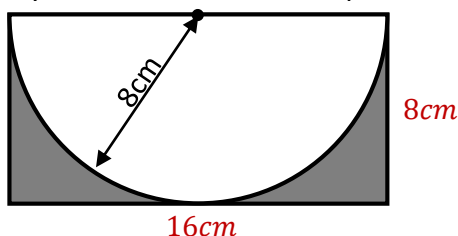
Answer: $2 \times 3^2 \times 7$

2) Factorise and solve $9x^2 - 25 = 0$ (3 marks)

$$(3x + 5)(3x - 5) = 0$$

Answer: $x = \frac{5}{3}$ or $x = -\frac{5}{3}$

3) The radius of the semi circle is 8cm. Calculate the area of the shaded section. Leave your answer in terms of pi. (4 marks)



$$\text{Rectangle} = 16 \times 8 = 128$$

$$\text{Circle} = \pi \times 8^2 = 64\pi$$

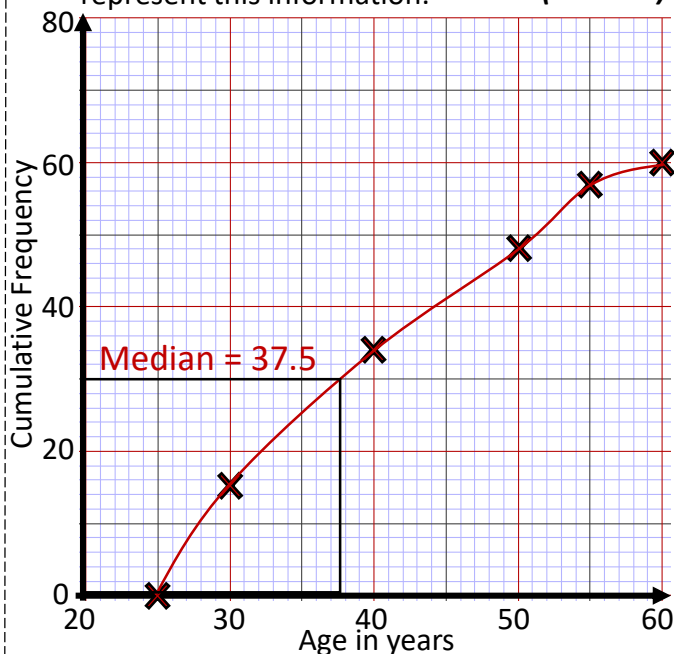
$$\text{Semi circle} = 64\pi \div 2 = 32\pi$$

Answer: $128 - 32\pi \text{ cm}^2$

4) This frequency table gives information about the ages of 60 fire fighters. (3 marks)

Age (A) in years	Frequency	Age (A) in years	CF
$25 < A \leq 30$	15	$25 < A \leq 30$	15
$30 < A \leq 40$	19	$25 < A \leq 40$	34
$40 < A \leq 50$	14	$25 < A \leq 50$	48
$50 < A \leq 55$	9	$25 < A \leq 55$	57
$55 < A \leq 60$	3	$25 < A \leq 60$	60

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



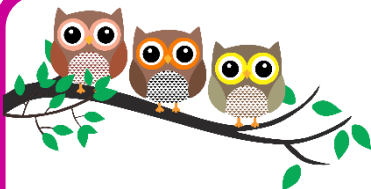
b) Use your cumulative frequency graph to find an estimate for the median age. (2 marks)

Answer: 37 or 38 years old

Q	Topic	Σ	R	A	G
1	Product of Prime Factors				
2	Difference of Two Squares				
3	Area Problem				
4	Cumulative Frequency				

Higher Interleaving Quiz

Answers



Branch 1 Quiz 2

1) The ratio of x : y is 3:4

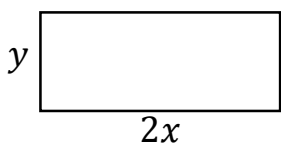
a) Circle the correct statement

(1 marks)

x is $\frac{3}{4}$ of y y is $\frac{3}{4}$ of x x is $\frac{3}{7}$ of y y is $\frac{4}{7}$ of x

b) Write an expression for the perimeter of the rectangle in terms of y .

(3 marks)



$$x = \frac{3}{4}y$$

$$y + 2\left(\frac{3}{4}y\right) + 2\left(\frac{3}{4}y\right) + y = y + 4\left(\frac{3}{4}y\right) + y = y + 3y + y$$

Answer: $5y$

2) Expand and simplify

$$(3x + 4)(x - 1) - 2x(x + 5)$$

(3 marks)

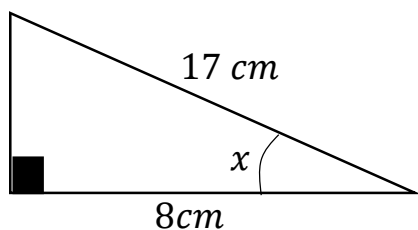
$$3x^2 - 3x + 4x - 4 - 2x^2 - 10x$$

$$= x^2 + x - 4 - 10x$$

Answer: $x^2 - 9x - 4$

3) Work out the size of angle x

(2 marks)



$$\cos x = \frac{8}{17}$$

$$x = \cos^{-1}\left(\frac{8}{17}\right)$$

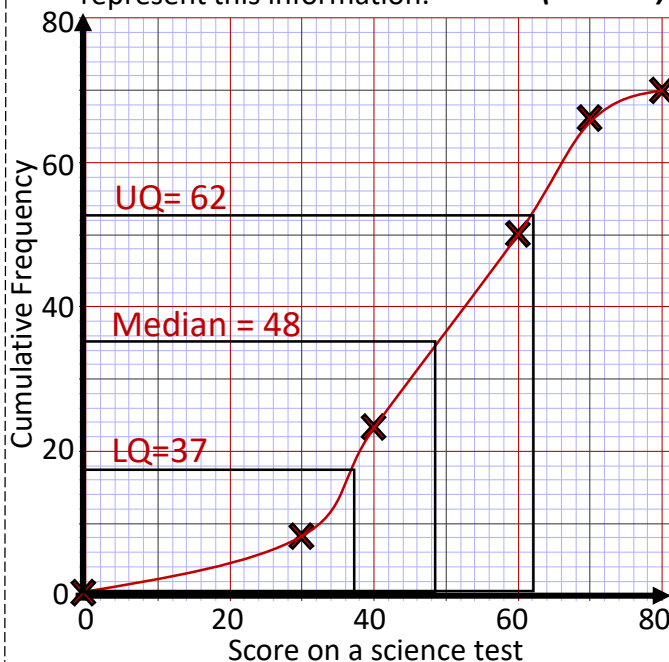
Answer: 61.9°

4) This frequency table gives information about the scores of 70 students on a science test.

Score (S)	Frequency	Score (S)	CF
$0 < S \leq 30$	8	$0 < S \leq 30$	8
$30 < S \leq 40$	15	$0 < S \leq 40$	23
$40 < S \leq 60$	27	$0 < S \leq 60$	50
$60 < S \leq 70$	16	$0 < S \leq 70$	66
$70 < S \leq 80$	4	$0 < S \leq 80$	70

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)

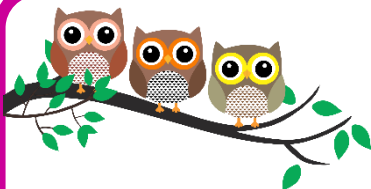
$$62 - 37$$

Answer: 25

Q	Topic	Σ	R	A	G
1	Ratio Problem				
2	Expand and simplify				
3	Right Angled Trigonometry				
4	Cumulative Frequency				

Higher Interleaving Quiz

Answers



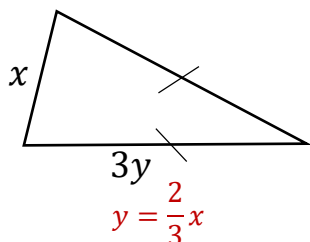
Branch 1 Quiz 3

1) The ratio of x : y is 3:2

a) Circle the correct statement **(1 marks)**

x is $\frac{2}{3}$ of y **y is $\frac{2}{3}$ of x** x is $\frac{3}{5}$ of y y is $\frac{2}{5}$ of x

b) Write an expression for the perimeter of the triangle in terms of x . **(3 marks)**



$$x + 3y + 3y = x + 3\left(\frac{2}{3}x\right) + 3\left(\frac{2}{3}x\right)$$

$$= x + 2x + 2x$$

Answer: 5x

2) $f(x) = x^2 - 2$

a) Circle the value for $f(-3)$ **(1 marks)**

-7 11 -11 **7**

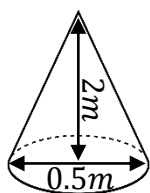
b) Circle the expression for $f^{-1}(x)$ **(1 marks)**

$-(x^2 + 2)$ $\frac{2}{x^2}$ **$\sqrt{x + 2}$** $\frac{(x + 2)}{2}$

3) **(3 marks)**

a) Calculate the volume of the cone. Give your answer in centimetres.

$$\text{Volume of cone} = \frac{1}{3}\pi r^2 h$$



$$(\pi \times 25^2 \times 200) \div 3$$

Answer: 130899.69cm³

b) The cone has density of 0.2g/cm³. **(2 marks)**
Calculate the mass of the object.

$$130899.69 \times 0.2$$

Answer: 26179.94g

4) This frequency table gives information about the scores of 70 students on a science test.

Score (S)	Frequency	MP	Fx
$0 < S \leq 30$	8	15	120
$30 < S \leq 40$	15	35	525
$40 < S \leq 60$	27	50	1350
$60 < S \leq 70$	16	65	1040
$70 < S \leq 80$	4	75	300
	70		3335

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

$$3335 \div 70 = 47.64285714$$

Answer: 48 marks

b) Calculate the proportion of the class which scores more than 50% on the test. **(1 marks)**

$$80 \text{ marks} \div 2 = 40 \text{ marks}$$

$$27 + 16 + 4 = 47 \quad \frac{47}{70} = 67.14\%$$

Answer: 67.1%

Q	Topic	Σ	R	A	G
1	Ratio Problem				
2	Functions				
3	Volume and Mass				
4	Mean from a Table				