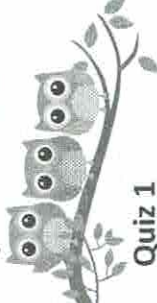


DAB 29/4

# Higher Interleaving Quiz

## Branch 12

### Quizzes 1 to 3



#### Quiz 1

Q	Topic	Σ	R	A	G
1	Product of Prime Factors				
2	Factorise and Solve				
3	Circle Theorems				
4	Probability Tree				

#### Home Study Focus

Home Study Completed

#### Quiz 2

Q	Topic	Σ	R	A	G
1	Percentage Problem				
2	Simultaneous Equations				
3	Surface Area Problem				
4	Averages from a Table				

#### Home Study Focus

Home Study Completed

#### Quiz 3

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



# Higher Interleaving Quiz

## Branch 12 Quiz 1

1) Express 504 as a product of prime factors in index form. (3 marks)

504  
 $2^3 \times 3^2 \times 7$

2)  $2 \times 2 \times 2 \times 3 \times 7 = 126$

$2^3 \times 3^2 \times 7 = 63$

2) a) Factorise Fully  $18x^2y + 12y^2$  (2 marks)

$6y(3ax^2 + 2y)$

Answer:

b) Solve  $x^2 + 2x - 35 = 0$  (3 marks)

$(x+7)(x-5) = 0$   
 $x = -7$  or  $x = 5$

Answer:

$x = -7$  or  $x = 5$

3) Find the size of angle DCA. Give a reason for your answer. (3 marks)

Tangent meets radius at  $90^\circ$

$90 - 27 = 63^\circ$

0 2 Angles in semi circle meet circumference at  $90^\circ$

3 Angles in triangle total  $180^\circ$

4 Alternate segment theorem

Answer:  $63^\circ$

4) There are 8 biscuits in a tin. 5 digestives and 3 ginger nuts. Mrs D picks out and eats two biscuits at random from the tin. Calculate the probability of selecting two different biscuits. (4 marks)

4/8 D

3/7 P

5/7 P

2/7 G

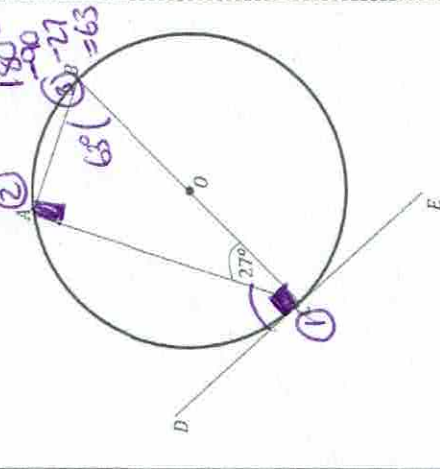
$P(DG) = \frac{5}{8} \times \frac{3}{7} = \frac{15}{56}$

$P(GD) = \frac{3}{8} \times \frac{5}{7} = \frac{15}{56}$

Answer:

$\frac{30}{56} = \frac{15}{28}$

3)



Q	Topic	Σ	R	A	G
1	Product of Prime Factors				
2	Factorise and Solve				
3	Circle Theorems				
4	Probability Tree				



# Higher Interleaving Quiz

## Branch 12 Quiz 2

- 1) In 2010 there were 20 million computer tablets shipped around the world. In 2017 there were 163 million computer tablets shipped around the world. Calculate the percentage increase. (3 marks)

Change x 100  
original

$$\frac{143}{20} \times 100$$

Answer: 715% increase

- 2) Mrs Quinn buys 30 bags of flour for food tech. There are  $x$  bags that weigh 1.5kg each. There are  $y$  bags that weigh 2kg each.

- a) Write down an equation connecting  $x$  and  $y$ .

$$x + y = 30$$

Answer:

- b) The total weight of the bags is 54kg. Use algebra to work out the values of  $x$  and  $y$ . You must show your working out. (3 marks)

$$1.5x + 2y = 54$$

$$2x + 2y = 60$$

$$-1.5x + 2y = 54$$

$$0.5x = 6$$

$$x = 12$$

Sub in  $x + y = 30$

$$12 + y = 30$$

$$-12 \quad y = 18$$

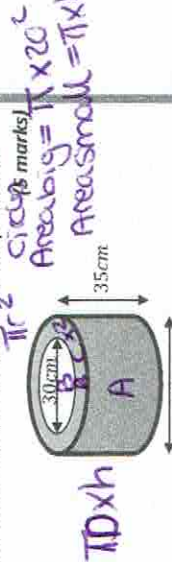
$$x = 12 \quad y = 18$$



# Higher Interleaving Quiz

## Branch 12 Quiz 2

- 3) A iron tube needs to be painted with rust protection. Calculate the surface area of the tube which needs to be painted.



$$\text{Outer Ring} = \pi \times 40 \times 35 = 1400\pi$$

$$\text{Inner Ring} = \pi \times 30 \times 35 = 1050\pi$$

$$\text{Shaded top} = 400\pi - 225\pi = 185\pi$$

$$\text{Shaded bottom} = 185\pi$$

$$\text{Answer: } 2820\pi = 8859.29 \text{ cm}^2$$

- 4) There are 300 runners in the Edinburgh marathon. (3 marks)

Time (t) in mins	Frequency	MP	Fx
$180 < t \leq 200$	20	190	3800
$200 < t \leq 260$	100	230	23000
$260 < t \leq 300$	180	280	50400
$t > 300$	0		77200

Estimate the mean time

$$77200 \div 300$$

$$\text{Answer: } 257.3 \text{ mins}$$

Q	Topic	$\Sigma$	R	A	G
1	Percentage Problem				
2	Simultaneous Equations				
3	Surface Area Problem				
4	Averages from a Table				



# Higher Interleaving Quiz

## Branch 12 Quiz 3

- 1) Adam, Jake and Sally share sweets in the ratio of 3:5:7

Adam has 104 less sweets than Sally. How many sweets does Jake have? (3 marks)



$$4 \text{ boxes} = 104$$

$$1 \text{ box} = 26$$

$$\text{Jake } 5 \text{ boxes} = 26 \times 5 = 130 \text{ sweets}$$

Answer: 130 sweets

- 2) Expand and Simplify  $(x+1)(x+2)^2$  (4 marks)

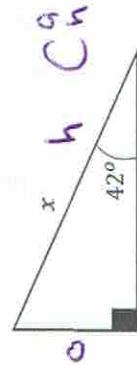
$$(x+1)(x+2)(x+2)$$

$$\begin{array}{r} x^2+2x \\ +x^2+2x \\ \hline 2x^2+4x \\ +x^2+2x \\ \hline 3x^2+6x+2 \end{array}$$

$$(x^2+3x+2)(x+2)$$

$$\begin{array}{r} x^3+3x^2+2x \\ +x^2+3x+2 \\ \hline x^3+4x^2+6x+2 \end{array}$$

- 3) Work out the length of  $x$  (2 marks)



$$\cos(42) = \frac{x}{12}$$

$$x = 12 / \cos(42)$$

$$\text{Answer: } 16.15 \text{ cm}$$



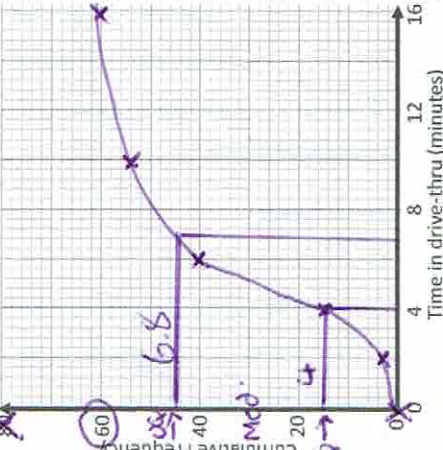
# Higher Interleaving Quiz

## Branch 12 Quiz 3

- 4 The times that 60 customers waited in a drive-thru are given in the frequency table.

Time (t) in mins	Frequency	RPPCF
$0 < t \leq 2$	3	3
$2 < t \leq 4$	12	15
$4 < t \leq 6$	25	40
$6 < t \leq 10$	14	54
$10 < t \leq 16$	6	60

- 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)

$$6.8 - 4 = 2.8$$

$$\text{Answer: } 2.8 \pm 0.4$$

Q	Topic	$\Sigma$	R	A	G
1	Ratio Problem				
2	Expand and Simplify				
3	Right Angled Trigonometry				
4	Cumulative Frequency				