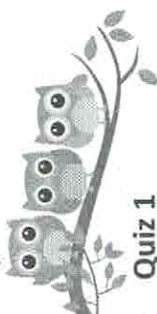


Higher Interleaving Quiz

Branch 11

Quizzes 1 to 3



Quiz 1

Q	Topic	Σ	R	A	G
1	Standard Form				
2	Functions				
3	Transformations				
4	Probability				

Home Study Focus

Home Study Completed

Quiz 2

Q	Topic	Σ	R	A	G
1	Proportion				
2	Simultaneous Equations				
3	PAV problem				
4	Averages from a Table				

Home Study Focus

Home Study Completed

Quiz 3

Q	Topic	Σ	R	A	G
1	Recurring Decimals				
2	Regional Inequalities				
3	Circle Theorems				
4	Histogram				

Home Study Focus

Home Study Completed



Higher Interleaving Quiz

Branch 11 Quiz 1

1) Place the following numbers in ascending order: 3)

- 0.308×10^4
- 30.8×10^3
- 3.8×10^3
- 8.2×10^{-2}

Small to big

$0.308 \times 10^4 = 3080$ (2 marks)

$30.8 \times 10^3 = 30800$

$3.8 \times 10^3 = 3800$

$8.2 \times 10^{-2} = 0.082$

$8.2 \times 10^{-2}, 0.308 \times 10^4$

$3.8 \times 10^3, 30.8 \times 10^3$

2) $f(x) = 2x - 4$ and $g(x) = 3x^2$

a) Find $f^{-1}(x)$ (2 marks)

Input $x \rightarrow (x-2) \rightarrow (-4) \rightarrow P(x)$ Output

$f^{-1}(x) = \frac{x+4}{2}$

Answer: $x+4$

b) Find $fg(x)$ (2 marks)

$f(3x^2) = 2(3x^2) - 4$

$= 6x^2 - 4$

Answer: $6x^2 - 4$

b) Find the value of x when $fg(x) = 50$ (2 marks)

$6x^2 - 4 = 50$

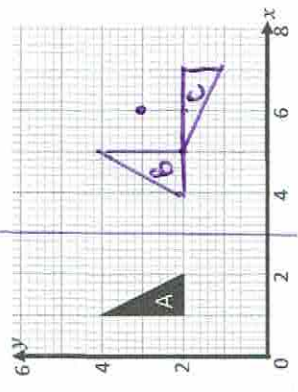
$+4$

$6x^2 = 54$

$\frac{6}{6} x^2 = \frac{54}{6}$

$x^2 = 9$

Answer: $x = \sqrt{9} = 3$



- a) Reflect A in the line $x = 3$. (2 marks)
Label the new shape B.
- b) Rotate B 90° Anti-Clockwise from the point (6, 3). (1 mark)
Label the new shape C.

4) A bag contains counters that are blue, red, pink and green.

A counter is chosen at random.

The probability it is red is $\frac{3}{20}$.

Work out the probability it is pink. (4 marks)

Number of Counters	Blue	Red	Pink	Green
	$4x + 5$	15	$5x$	$7x$

$\frac{3}{20} = 15 \text{ counters}$ $\frac{1}{20} = 5 \text{ counters}$

$\frac{20}{20} = 100 \text{ counters}$

$16x + 20 = 100$ $P(\text{Pink}) = \frac{5(5)}{100}$

$16x = 80$ $\frac{25}{100} = \frac{1}{4}$

Answer: $2x = 5$

Q	Topic	Σ	R	A	G
1	Standard Form				
2	Functions				
3	Transformations				
4	Probability				

Higher Interleaving Quiz

Branch 11 Quiz 2

1) y is inversely proportion to the square of x .
 $y = 5$ when $x = 3$
 Find the value of y when $x = 5$

$y \propto \frac{1}{x^2}$ $y = \frac{k}{x^2}$ $5 = \frac{k}{3^2}$ $k = 45$
 $y = \frac{45}{x^2}$ $y = \frac{45}{5^2} = \frac{9}{5}$

Answer: $y = 1.4$

2) Miss B buys 22 bags of sweets for her form class.

There are x bags that cost 10p each.
 There are y bags that cost 8p each.

a) Write down an equation connecting x and y . (1 mark)

Answer: $x + y = 22$

b) The total cost of the bags is £1.92. 192p
 Use algebra to work out the values of x and y .
 You must show your working out. (4 marks)

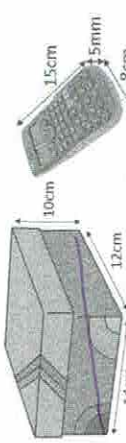
$x + y = 22$
 $10x + 8y = 192$
 $8x + 8y = 176$
 $2x = 16$
 $x = 8$

Sub in $x + y = 22$
 $8 + y = 22$
 -8
 $y = 14$

$x = 8$ $y = 14$



3) A school are planting a time capsule. Will the Calculator fit inside the time capsule box? (3 marks)



$\sqrt{14^2 + 12^2} = 18.4\text{cm}$

Yes diagonal of box is approx 3cm longer than the calculator.

Answer: Yes.

4) There are 250 runners in the borders half marathon. (3 marks)

Time (t) in mins	Frequency	MP	Fx
$80 < t \leq 120$	60	100	6000
$120 < t \leq 140$	90	130	11700
$140 < t \leq 180$	100	160	16000
$t \geq 180$	0		
	250		33700

Estimate the mean time

$33700 \div 250 = 134.8 \text{ mins}$

Answer: 134.8 mins.

Q	Topic	Σ	R	A	G
1	Proportion				
2	Simultaneous Equations				
3	PAV problem				
4	Averages from a Table				



Higher Interleaving Quiz

Branch 11 Quiz 3

1) Express 0.345 as a fraction in its simplest form.

$x = 0.345454545 \dots$
 $1000x = 345.454545 \dots$
 $10x = 3.454545 \dots$
 $990x = 342$

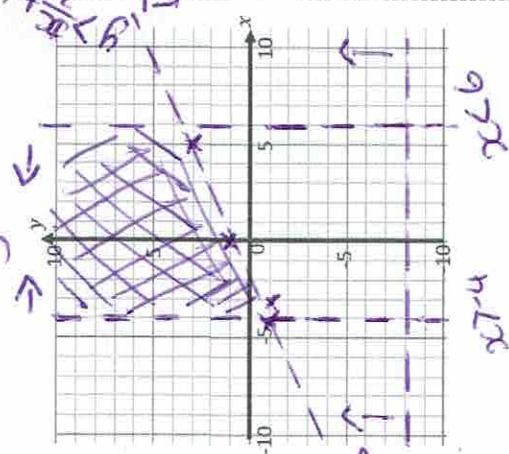
$x = \frac{342}{990} = \frac{19}{55}$

Answer: 19/55

2) On the grid shade the region that satisfies all three of these inequalities. (3 marks)

$-4 < x < 6$, $y > -8$ and $y > \frac{x}{2} + 1$

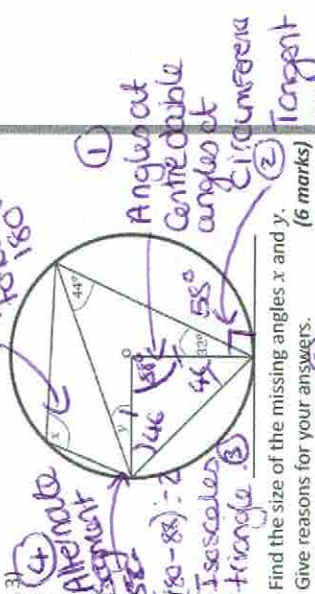
$x > -4$ | 0 | 4
 $y > -1$ | 1 | 3



Higher Interleaving Quiz

Branch 11 Quiz 3

3) Find the size of the missing angles x and y . Give reasons for your answers. (6 marks)



$90 - 32 = 58$

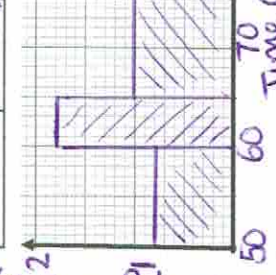
$y = 58 - 46 = 12$

$x = 180 - (46 + 32) = 102$

$x = 102$ $y = 12$

4) Draw histogram to represent the information. (3 marks)

Time (t) in mins	Frequency	CW	Fd
$50 < t \leq 60$	8	10	0.8
$60 < t \leq 65$	9	6	1.8
$65 < t \leq 80$	15	15	1



Q	Topic	Σ	R	A	G
1	Recurring Decimals				
2	Regional Inequalities				
3	Circle Theorems				
4	Histogram				