

Year 10 Foundation

Response to EOY Exam

Complete at least 3 topics over the holidays

Contents

Page 1 – Money questions

Page 2 – Value for Money

Page 3 – Percentage Increase/Decrease

Page 4 – Ratio

Page 5 – Recipe Proportion

Page 6 – Using a Calculator

Page 7 – Sequences

Page 8 – Factorising

Page 9 - Solving Equations

Page 10 – Forming and Solving Equations

Page 11 – Pie Charts

- 1) Bill buys 3 melons at £1.09 each.
- a) How much does he spend?
- b) How much change does he get from £5?
- 2) Jenny is taking her family to the cinema.
Jenny pays for 1 adult and 3 children.
- a) How much does she spend?
- b) How much change does she get from £20?

Cinema

Adult: £6.50

Child: £4.00

- 3) Bob is paid £7 per hour.
- a) Last monday Bob worked for 8 hours
Work out his pay for that day.
- b) Yesterday Bob was paid £42.
Work out how many hours Bob worked.
- 4) Complete this bill.
- | | |
|-------------------------------------|-----------------|
| 1½ kg of carrots at 40p per kg | = £..... |
| 3 kg of potatoes at 52p per kg | = £..... |
| boxes of tea bags at 90p each | = £1.80 |
| 4 packs of yogurts at each | = £4.80 |
| Total | = £..... |

Value for Money

- 1) Which of the following offer better value for money?

Working must be shown

*Without a calculator,
please, for question 1.*

- a) 200ml of toothpaste for 50p or 400ml of toothpaste for 90p
- b) 600g of bananas for 70p or 200g of bananas for 22p
- c) 2 litres of paint for £1.60 or 5 litres of paint for £3.50
- d) 60 teabags for £1.62 or 40 teabags for £0.96

- 2) Which of these is the best buy?

20 exercise books
for £4.00

35 exercise books
for £7.80

- 3) Hamza needs to buy 2 litres of paint.

At the shop he gets two choices:

500ml for £2.55 or 1 litre for £4.79.

*Without a calculator,
please, for question 3.*

- a) Work out which of these would be the best buy for Hamza.
- b) How much does he save if he buys the 'best buy' rather than the 'worst buy'.

You must show all your working.

- 4) Honey pots are sold in two sizes.

A small pot costs 45p and weighs 450g.

A large pot costs 80p and weighs 850g.

Which pot of honey is better value for money?

You must show all your working.

Increase/Decrease by a Percentage

- Non-Calculator**
- 1) Increase:
a) 500 by 10% c) 80 by 15%
b) 320 by 10% d) 75 by 20%
- 2) Decrease:
a) 400 by 10% c) 140 by 15%
b) 380 by 10% d) 35 by 20%
- 3) The price of laptop is increased by 15%.
The old price of the laptop was £300.
Work out the new price.
- 4) The price of a £6800 car is reduced by 10%.
What is the new price?
-
- 5) Increase:
a) 65 by 12% c) 600 by 17.5%
b) 120 by 23% d) 370 by 17.5%
- 6) Decrease:
a) 42 by 15% c) 52 by 8.5%
b) 79 by 12% d) 8900 by 18%
- Calculator**
- 7) The price of a mobile phone is £78.40 plus VAT.
VAT is charged at a rate of 17.5%.
What is the total price of the mobile phone?
- 8) In a sale, normal prices are reduced by 7%.
The normal price of a camera is £89.
Work out the sale price of the camera.
- 9) A car dealer offers a discount of 20% off the normal price of a car, for cash.
Peter intends to buy a car which usually costs £6800.
He intends to pay by cash.
Work out how much he will pay.
- 10) A month ago, John weighed 97.5 kg.
He now weighs 4.5% more.
Work out how much John now weighs.
Give your answer to 1 decimal place.

1. Write the following ratios in their simplest form

a) $6 : 9$

b) $10 : 5$

c) $7 : 21$

d) $4 : 24$

e) $12 : 40$

f) $18 : 27$

g) $4 : 2 : 8$

h) $18 : 63 : 9$

2. Complete the missing value in these equivalent ratios

a) $3 : 5 = 12 : \square$

b) $4 : 9 = \square : 27$

c) $\square : 7 = 16 : 14$

d) $2 : 3 = 3 : \square$

3. Match together cards with equivalent ratios:

$3 : 4$

$10 : 5$

$50 : 100$

$2 : 1$

$5 : 2$

$15 : 20$

$15 : 6$

$1 : 2$

4. The ratio of girls to boys in a class is $4 : 5$.

a) What fraction of the class are girls?

b) What fraction of the class are boys?

5. A model of a plane is made using a scale of $1 : 5$.

a) If the real length of the plane is 20m, what is the length of the model in metres?

b) If the wings of the model are 100cm long, what is the real length of the wings in metres?

6. Share out £250 in the following ratios:

a) $1 : 4$

b) $2 : 3$

c) $7 : 3$

d) $9 : 12 : 4$

7. Share out £80 between Tom and Jerry in the ratio $3 : 2$.

8. A box of chocolates has 3 milk chocolates for every 2 white chocolates.

There are 60 chocolates in the box.

Work out how many white chocolates are in the box.

9. In a bracelet, the ratio of silver beads to gold beads is $5 : 2$.

The bracelet has 25 silver beads.

How many gold beads are in the bracelet?

10. To make mortar you mix 1 shovel of cement with 5 shovels of sand.

How much sand do you need to make 30 shovels of mortar?

Recipe Type Ratio Questions

- 1) Here are the ingredients for making a vegetable soup for 6 people:

2 carrots
1 onion
800ml stock
50g lentils
4g thyme

Work out the amount of each ingredient for

- a) 12 people
- b) 9 people
- c) 30 people.
- 2) Here are the ingredients for making apple crumble for 4 people:

80g plain flour
60g ground almonds
90g sugar
60g butter
4 apples

Work out the amount of each ingredient for

- a) 2 people
- b) 6 people
- c) 18 people.
- 3) Here are the ingredients for making 1500 ml of parsnip soup:

450g parsnips
300g leeks
150g bramley apples
3 onions
 $1\frac{1}{2}$ pints of chicken stock

Work out the amount of each ingredient for

- a) 500 ml of soup
- b) 1000 ml of soup
- c) 2500 ml of soup.

Hard Calculator Questions

- 1) Find the value of the following:

(write down all the figures on your calculator display)

a) $(0.3 + 2.8)^2$

b) $2.7^2 + 3.9^2$

c) $4.5^2 - \sqrt{53}$

d) $6 \times \sqrt{(37 \div 4)}$

- 2) Find the value of the following:

(write your answers correct to 1 decimal place)

a) $5.6^3 + 11.2$

b) $87.4 \div (\sqrt{39} + 3)$

c) $\frac{\sqrt{3412}}{4.3^2}$

d) $\frac{15^2 - 12^2}{\sqrt{9.6 - 3.87}}$

- 3) Work out

$$\sqrt{16.75} + 1.53^2$$

a) Write down all the figures on your calculator display.

b) Write your answer to part (a) correct to 1 decimal place.

- 4) Work out

$$(2.4 \times 1.9)^2 \times 2.03$$

Write down all the figures on your calculator display.

- 5) Use your calculator to work out the value of

$$\frac{7.34 \times 4.71}{5.63 + 11.89}$$

a) Write down all the figures on your calculator display.

b) Write your answer to part (a) to an appropriate degree of accuracy.

1. Write down the first 5 terms and the 10th term of the following sequences:

eg. $2n + 1$ 3, 5, 7, 9, 11.....21

a) $2n + 2$

d) $7n$

b) $3n + 1$

e) $3n - 1$

c) $n + 3$

f) $7n - 3$

2. Find the n^{th} term of the following sequences:

a) 5, 10, 15, 20...

d) 22, 18, 14, 10...

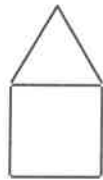
b) 5, 8, 11, 14...

e) -3, 3, 9, 15...

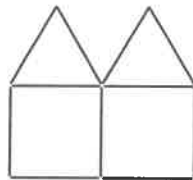
c) 1, 8, 15, 22...

f) 4, -1, -6, -11...

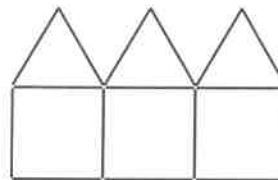
3. Here are some patterns made from sticks.



Pattern 1



Pattern 2



Pattern 3

a) Draw pattern 4 in the space, below..

b) How many sticks are used in

(i) pattern 10

(ii) pattern 20

(iii) pattern 50

c) Find an expression, in terms of n , for the number of sticks in pattern number n .

d) Which pattern number can be made using 301 sticks?

- 1) Factorise
 - a) $2x + 4$
 - b) $2y + 10$
 - c) $3x + 12$
 - d) $3x - 6$
 - e) $5x - 15$

- 2) Factorise
 - a) $p^2 + 7p$
 - b) $x^2 + 4x$
 - c) $y^2 - 2y$
 - d) $p^2 - 5p$
 - e) $x^2 + x$

- 3) Factorise
 - a) $2x^2 + 6x$
 - b) $2y^2 - 8y$
 - c) $5p^2 + 10p$
 - d) $7c^2 - 21c$
 - e) $6x^2 + 9x$

- 4) Factorise
 - a) $2x^2 - 4xy$
 - b) $2t^2 + 10tu$
 - c) $6x^2 - 8xy$
 - d) $3x^2y^2 + 9xy$

Solving Equations

Solve the following equations

1) $2p - 1 = 13$

2) $4y + 1 = 21$

3) $6x - 7 = 32$

4) $x + x + x + x = 20$

5) $x + 3x = 40$

6) $5(t - 1) = 20$

7) $4(5y - 2) = 52$

8) $4(y + 3) = 24$

9) $20x - 15 = 18x - 7$

10) $4y + 3 = 2y + 10$

11) $2x + 17 = 5x - 4$

12) $2x + 7 = 16 - 4x$

13) $5(x + 3) = 2(x + 6)$

14) $4(2y + 1) = 2(12 - y)$

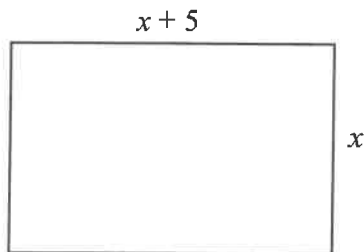
15) $7 - 3x = 2(x + 1)$

16) $\frac{x-3}{2} = 5$

17) $\frac{2x+4}{3} = 7$

18) $\frac{40-x}{3} = 4 + x$

- 1) The width of a rectangle is x centimetres.
The length of the rectangle is $(x + 5)$ centimetres.



- a) Find an expression, in terms of x , for the perimeter of the rectangle.
Give your answer in its simplest form.

The perimeter of the rectangle is 38 centimetres.

- b) Work out the length of the rectangle.

2)

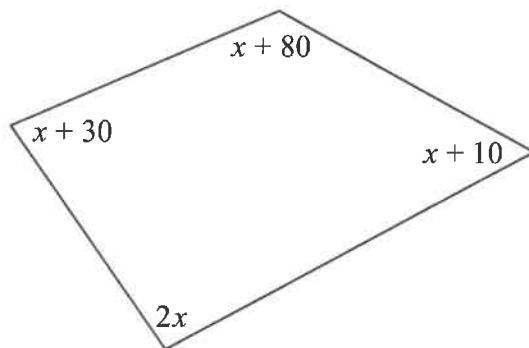


Diagram NOT accurately drawn

The sizes of the angles, in degrees, of the quadrilateral are

$x + 10$
 $2x$
 $x + 80$
 $x + 30$

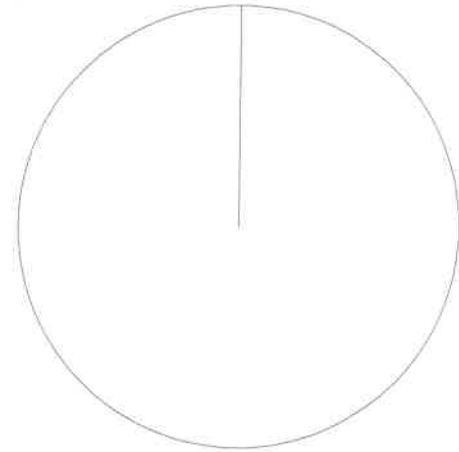
- a) Use this information to write down an equation in terms of x .
- b) Use your answer to part (a) to work out the size of the smallest angle of the quadrilateral.
- 3) Sarah buys 6 cups and 6 mugs
A cup costs £ x
A mug costs £ $(x + 3)$
- a) Write down an expression, in terms of x , for the total cost, in pounds, of 6 cups and 6 mugs.
- b) If the total cost of 6 cups and 6 mugs is £48, write an equation in terms of x .
- c) Solve your equation to find the cost of a cup and the cost of a mug.

Pie Charts

- 1) Patrick asked some of his colleagues which was their favourite holiday destination.
The table shows the results.

City	Frequency
Alicante	8
Paris	7
Ibiza	15
St Lucia	1
Biarritz	9

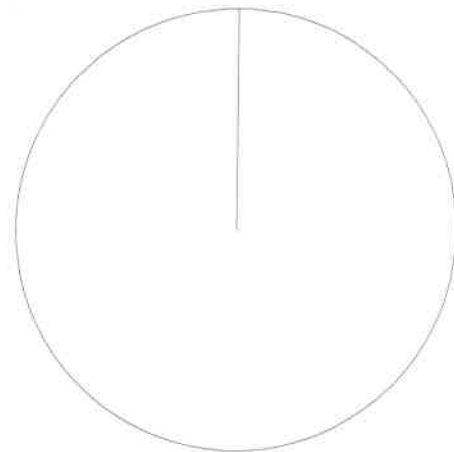
Draw a pie chart to illustrate the information.



- 2) Brian asked 60 people which region their favourite rugby team came from.
The table shows the results.

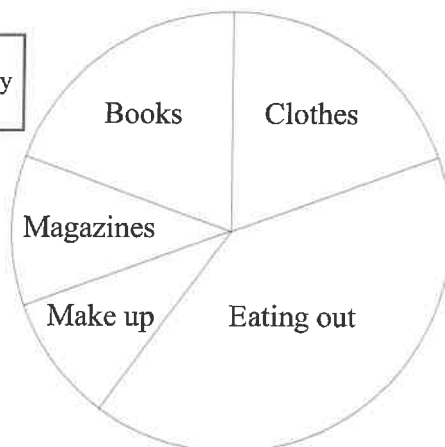
Region	Frequency
Southern England	9
London	23
Midlands	16
Northern England	12
Total	60

Draw a pie chart to illustrate the information.



- 3) Sophie represents her monthly expenses using a pie chart.

Diagram accurately drawn



Numbers from her table have been rubbed out by mistake.

Use the pie chart to complete the table.

		Angle
Clothes	£35	
Eating out		
Make up	£17	34°
Magazines		
Books		
Total	£180	