

Year 6 Algebra

Q1. In this sequence, the rule to get the next number is

Multiply by 2, and then add 3

Write the missing numbers.

25

53

2 marks

Q2.  and  each stand for a different number.

= 34

+

 =

+

 +

What is the value of  ?

1 mark

Q3. A theme park sells tickets online. Each ticket costs £24. There is a £3 charge for buying tickets. Which of these shows how to calculate the total cost, in pounds?

Tick **one**.

- number of tickets × 3 + 24
- number of tickets × 24 + 3
- number of tickets + 3 × 24
- number of tickets + 24 × 3

Q4. Dev says,



Which expression shows how much money Dev has left?

a is the amount of money, in pounds, that Dev gave away.

Tick **one**.

$10 + a$ ☐

$10 \div a$ ☐

$a - 10$ ☐

$10 - a$ ☐

$a \times 10$ ☐

1 mark

Q5.

Here is a rule for the time it takes to cook a chicken.

**Cooking time = 20 minutes plus an extra
40 minutes for each kilogram**

How many minutes will it take to cook a 3 kg chicken?

minutes

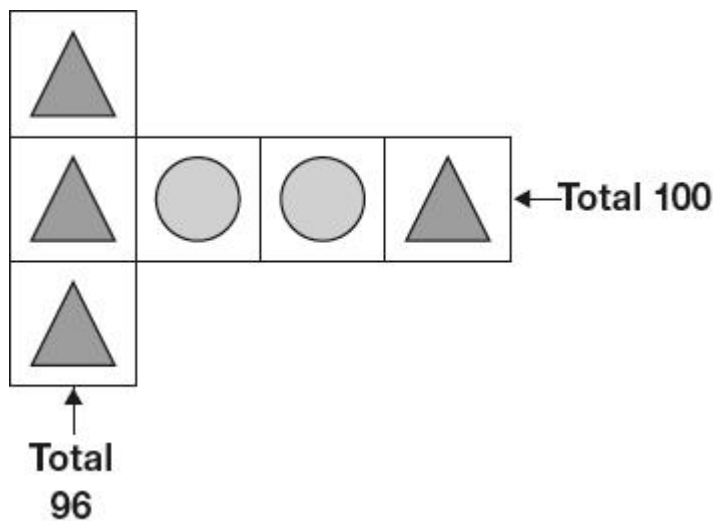
1 mark

What is the mass of a chicken that takes 100 minutes to cook?

kg

1 mark

Q6. Each shape stands for a number.



Work out the **value** of each shape.

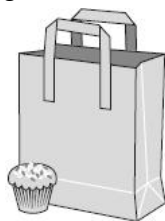
 = _____

1 mark

 = _____

1 mark

Q7. Maria bakes cakes and sells them in bags.



She uses this formula to work out how much to charge for one bag of cakes.

Cost = number of cakes × 20p + 15p for the bag

How much will a bag of 12 cakes cost?

£

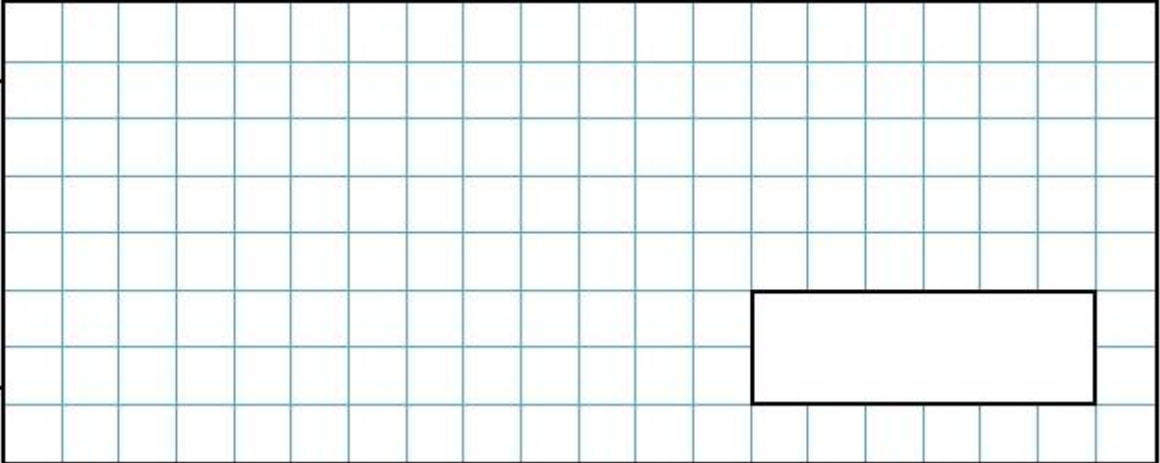
1 mark

Continues on next page...

Olivia buys a bag of cakes for £5.15

Use the formula to calculate how many cakes are in the bag.

Show
your
method



2 marks

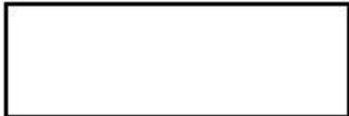
Q8. What is the value of $4x + 7$ when $x = 5$?

1 mark

Q9. n stands for a number.

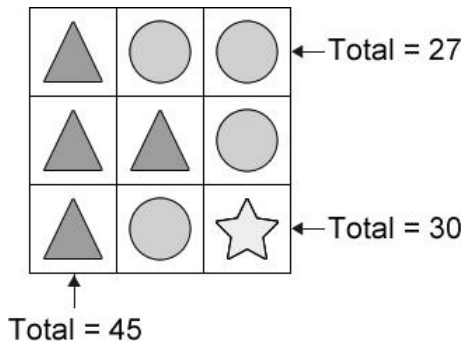
$$n + 7 = 13$$

What is the value of $n + 10$?



1 mark

Q10. Each shape stands for a number.



Work out the **value** of each shape.

	=	
	=	
	=	

1 mark

Q11. *a* and *b* each represent a whole number between 1 and 10

$2a + b = 8$

Write the three possible combinations of *a* and *b*
One is done for you.

when <i>a</i> =	1	<i>b</i> =	6
when <i>a</i> =		<i>b</i> =	</

Q12.

$$x + 2y = 20$$

x and y are whole numbers **less than 10**

What could x and y be?

$x =$

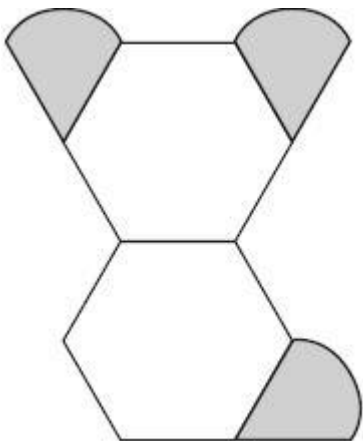
$y =$

1 mark

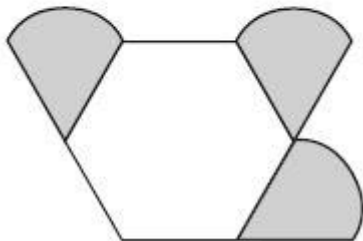
Q13.

Amina is making designs with two different shapes.

She gives each shape a value.

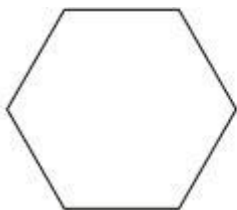


Total value is 147



Total value is 111

Calculate the value of each shape.

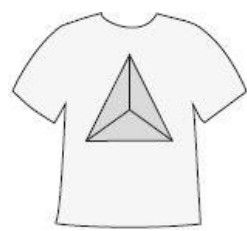
 =

 =

1 mark

1 mark

Q14. A shop prints designs on T-shirts.



They use this formula to work out the price for printing a design.

$$\text{price} = 60\text{p} \times \text{number of colours} + \text{\pounds}1.25$$

What is the price for printing a design that has **3** colours in it?

£

1 mark

Amina has **\pounds5** to spend on printing a design.

What is the greatest number of **colours** she can have in the design?

Show your method

colours

2 marks

Q15. Here is a pattern of number pairs.

<i>a</i>	<i>b</i>
1	9
2	19
3	29
4	39

Complete the **rule** for the number pattern.

$$b = \square \times a - \square$$

1 mark

Q16. $n = 22$

What is $2n + 9$?

1 mark

$2q + 4 = 100$

Work out the value of q .

$q =$

1 mark

Q17. Here is an equation.

$k = 100 - 4n$

(a) Find the value of k when $n = 60$

$k =$

1 mark

(b) Find the value of n when $k = 99$

$n =$

1 mark

Q18. g stands for a number on a grey card. w stands for a number on a white card.

Join all pairs of numbers that match this rule:

$2g + w = 10$

One is done for you.

