Name

Key to Five

Unit 3: Sequences and Forming Equations

The PiXL Ladder to Success

- Exam style question
- Solving equations in context
- Worded questions
- Forming basic equations

Section A

Question 1

Andy, Bob and Claire each collect trading cards.

Andy has x cards.

Bob has three times as many cards as Andy.

(a) Write down an expression for the number of cards that Bob has.

.....

(1)

Claire has 4 cards less than Andy.

(b) Write down an expression for the number of cards Claire has.

.....

(1)

(Total 2 marks)

Question 2

A shop sells milk and bread.

Milk costs **a** pence a bottle.
Bread costs **b** pence a loaf.

Sarah buys 3 bottles of milk and 2 loaves of bread.
Write a formula in terms of **a, b** to calculate the cost C of her shopping

(2)

Question 3

£x is shared equally between seven people.
How much does each person receive?

.....

(Total 1 mark)

Question 4

Mary goes on holiday to Florida.
She pays £380 altogether for the flights.
Her other expenses are £120 for each day of her holiday.

Write a formula for the total cost, £C, of her holiday when it lasts for n days.

.....

[2]

Question 5

a. Write down the algebraic expression for 6 more than x

……..

[1]

b. Use x to represent my age in years

My brother is 6 years older than me
The sum of our ages is 112 years

Write an equation using the information given

……..

[2]

Section B

Question 6

Chloe is x years old.
Her sister is four years older.
Her brother is twice her age.
The sum of their ages is 44 years.

a. Write an expression, in terms of x, for her sister's age.

.....

(Total 1 mark)

b. Form an equation in x to work out Chloe's age.

.....

(Total 2 marks)

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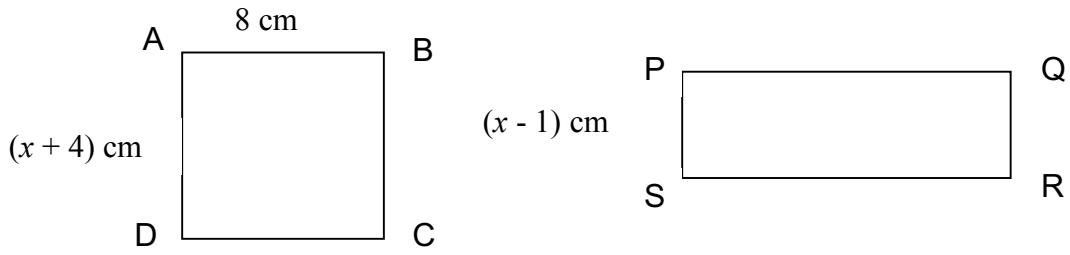
Question 7

ABCD is a square
PQRS is an rectangle



The oblong and the square have the same perimeter

Work out the length of PQ
Show clearly how you worked out your answer

[4]

Question 8

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

x + 10
2x
x + 20
x + 90

Use this information to write down an equation in terms of x

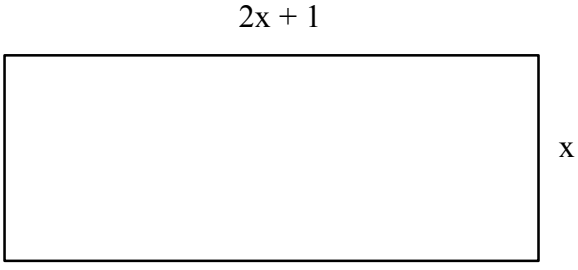
.....

(Total: 2 marks)

Question 9

Below is a rectangle with length *2x + 1* and width *x*.

The perimeter of the rectangle is 82 cm. Write down an equation in terms of *x* for the perimeter of the rectangle.



.....

(Total: 2 marks)

Question 10

Sarah is x years old.
Thomas is 3 years older than Sarah.
David is twice as old as Sarah.

The total of their ages is 51.

Write an equation for their total ages in terms of x.

.....

(Total: 2 marks)

Section C

Question 11

a) Use the first term and the term-to-term rule to generate the first five terms of this sequence.
First term is 4, term-to-term rule is add 0.6

……

(Total 1 mark)

Write down the next two terms in each of the sequences below:

(a) 5, 7, 9, 11, _____, _____, … **(1)**

(b) 2, 4, 8, 16, _____, _____, … **(1)**

(Total 2 marks)

Describe the term-to-term rule for each of these sequences.

(a) 3, 7, 11, 15, 19,…

……

(1)

(b) 37, 33, 29, 25, 21,..

……

(1)

(Total 2 marks)

Question 12

Jessica says this riddle about a sequence.

My first term is 23. My fourth term is 44. I am an arithmetic sequence.

What is the first five terms of the sequence?

……

(Total 2 marks)

Emily says "**the term-to-term rule of a sequence is add 3**".

Nancy says "**all the numbers in the sequence must be odd**".

Show that Nancy is wrong by writing a sequence with **five** terms.

……

(Total 2 marks)

Question 13

Here are the first five terms of a sequence.

1, 4, 9, 16, 25, …

(a) Write down the next two terms of this sequence.

……., …….. **(2)**

(b) Find the 10^{th} term of the sequence.

…… **(1)**

(Total 3 marks)

Question 14.

The first three cube numbers are:

1, 8, 27, …

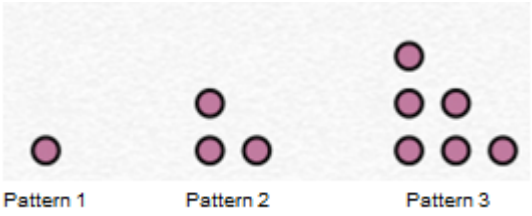
Write down the 4^{th} and 5^{th} cube numbers

…….. and ……..

(Total 2 marks)

Question 15.

This pattern of dots show the first three triangular numbers.



(a) Draw the pattern of dots for the 4^{th} triangular number.

(1)

(b) How many dots are there in the 6^{th} triangular number?

…….**(1)**

(Total 2 marks)

Question 16

(a) Write down the next two terms of this arithmetic sequence.

3.8, 4.0, 4.2, ___, ___,… **(1)**

(b) Work out the missing terms in this arithmetic sequence.

14, ___, 6, ___, -2, -6, … **(2)**

(Total 3 marks)