

WEEK 2 DAY 20th April 2020

WALT: Show understanding for the variables
I know I can use an alphabet for an unknown number.

Variables

Mathematicians simplify statements by using a language in which letters or other symbols represent numbers of objects. This language is called **algebra**.

Letters and other symbols, when used to take the place of numbers, are called **pronumerals**. Sometimes they are referred to as **variables** because the number that they replace can vary.

Statements in which letters are used to represent numbers are called **algebraic expressions**.

● EXAMPLE 1

a The diagram shows 1 cup and 2 marbles. How many marbles are there altogether if the cup contains:

- i** 5 marbles? **ii** 8 marbles? **iii** w marbles?



b The diagram shows 3 cups. What is the total number of marbles if each cup contains:

- i** 5 marbles? **ii** 8 marbles? **iii** w marbles?



c The diagram opposite shows 2 cups and 3 marbles. How many marbles are there altogether if each cup contains:

- i** 5 marbles? **ii** 8 marbles? **iii** w marbles?



- a** **i** Number of marbles = $5 + 2 = 7$
ii Number of marbles = $8 + 2 = 10$
iii Number of marbles = $w + 2$
- b** **i** Number of marbles = $5 + 5 + 5 = 3 \times 5 = 15$
ii Number of marbles = $8 + 8 + 8 = 3 \times 8 = 24$
iii Number of marbles = $w + w + w = 3 \times w$
- c** **i** Number of marbles = $5 + 5 + 3 = 2 \times 5 + 3 = 13$
ii Number of marbles = $8 + 8 + 3 = 2 \times 8 + 3 = 19$
iii Number of marbles = $w + w + 3 = 2 \times w + 3$

View the video

[Algebra in action](#)

Exercise 7A

- 1 The diagram shows 1 cup and 4 marbles. Complete the following statements.

If the cup contains:

- a 6 marbles, the total number of marbles = $\underline{\quad} + 4 = \underline{\quad}$
 b 20 marbles, the total number of marbles = $\underline{\quad} + 4 = \underline{\quad}$
 c w marbles, the total number of marbles = $\underline{\quad} + 4$
 d z marbles, the total number of marbles = $\underline{\quad} + \underline{\quad}$



- 2 The diagram shows 4 cups. Complete the following statements.

If each cup contains:

- a 5 marbles, the total number of marbles = $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = 4 \times \underline{\quad} = \underline{\quad}$
 b 8 marbles, the total number of marbles = $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = 4 \times \underline{\quad} = \underline{\quad}$
 c w marbles, the total number of marbles = $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = 4 \times \underline{\quad}$
 d z marbles, the total number of marbles = $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = 4 \times \underline{\quad}$



- 3 The diagram shows 3 cups and 2 marbles. Complete the following statements.

If each cup contains:

- a 5 marbles, the total number of marbles = $\underline{\quad} + \underline{\quad} + \underline{\quad} + 2 = 3 \times \underline{\quad} + 2 = \underline{\quad}$
 b 10 marbles, the total number of marbles = $\underline{\quad} + \underline{\quad} + \underline{\quad} + 2 = 3 \times \underline{\quad} + 2 = \underline{\quad}$
 c k marbles, the total number of marbles = $\underline{\quad} + \underline{\quad} + \underline{\quad} + 2 = 3 \times \underline{\quad} + 2$
 d z marbles, the total number of marbles = $\underline{\quad} + \underline{\quad} + \underline{\quad} + 2 = 3 \times \underline{\quad} + 2$



- 4 The diagram shows 2 packets and 3 biscuits. How many biscuits are there altogether if each packet contains:

- a 20 biscuits? b 25 biscuits?
 c 30 biscuits? d k biscuits?



- 5 The diagram shows 4 bottles and 6 pills.

- a Find the total number of pills if each bottle contains:

- i 20 pills ii 40 pills
 iii 50 pills

- b If t = the number of pills in each bottle, write an algebraic expression for the total number of pills.



- 6 a Draw a diagram to represent 3 packets and 10 nails.

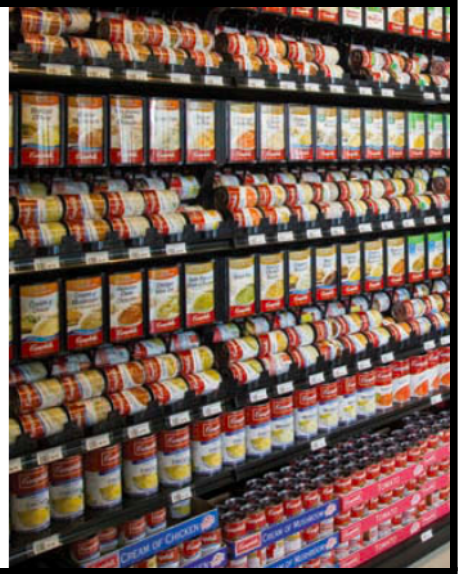
- b How many nails are there altogether if each packet contains:

- i 25 nails? ii 60 nails?
 iii 100 nails?

- c If m = the number of nails in each packet, write an algebraic expression for the total number of nails.



- 7 a** Draw a diagram to represent 5 balls of string plus a length of 0.3 m of string.
- b** Find the total length of string if each ball has a length of:
- i** 2 m
 - ii** 6 m
 - iii** 10 m
- c** If q = the length of string, in metres, in each ball, write an expression for the total length of string.
- 8 a** Draw a diagram to represent 6 cartons plus 4 cans of soup.
- b** Find the total number of cans of soup if each carton contains:
- i** 20 cans
 - ii** 30 cans
 - iii** 50 cans
- c** If d = the number of cans of soup in each carton, write an expression for the total number of cans.



Check your answers



Exercise 7A

1 a $6 + 4 = 10$ b $20 + 4 = 24$

c $w + 4$ d $z + 4$

2 a $5 + 5 + 5 + 5 = 4 \times 5 = 20$

b $8 + 8 + 8 + 8 = 4 \times 8 = 32$

c $w + w + w + w = 4 \times w$

d $z + z + z + z = 4 \times z$

3 a $5 + 5 + 5 + 2 = 3 \times 5 + 2 = 17$

b $10 + 10 + 10 + 2 = 3 \times 10 + 2 = 32$

c $k + k + k + 2 = 3 \times k + 2$

d $z + z + z + 2 = 3 \times z + 2$

4 a 43

b 53

c 63

d $2 \times k + 3$

5 a i 86

ii 166

iii 206

b $4 \times t + 6$

6 a



b i 85

ii 190

iii 310

c $3 \times m + 10$

7 a



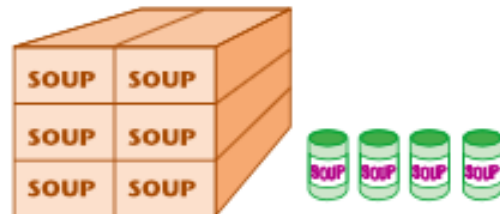
b i 10.3 m

ii 30.3 m

iii 50.3 m

c $5 \times q + 0.3$

8 a



b i 124

ii 184

iii 304

c $6 \times d + 4$