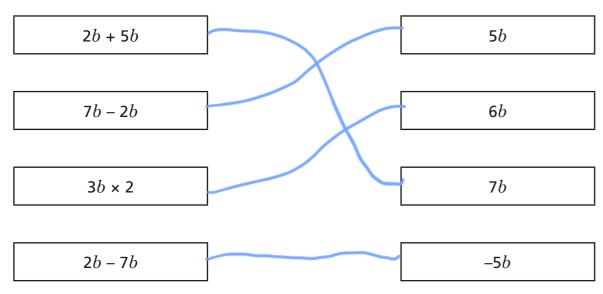
## ting

Rose Maths

## Simplify algebraic expressions by collecting like terms, using the $\equiv$ symbol

Match each expression to its simplified form.



Mo and Eva are simplifying expressions.

Tick the correct answers.

Expression	Mo's answer	Eva's answer
9 <i>a</i> – <i>a</i>	$9a - a \equiv 9$	$9a - a \equiv 8a$
b + b	$b+b\equiv b^2$	$b + b \equiv 2b$
$3h^3 + 2h^2$	$3h^3 + 2h^2 \equiv 5h^2$	$3h^3 + 2h^2 \equiv 5h^5$
3 <i>a</i> + 3 <i>b</i>	$3a + 3b \equiv 6ab$	$3a + 3b \equiv 3a + 3b$
5g + 2	$5g + 2 \equiv 5g + 2$	$5g + 2 \equiv 7g$
6 × 2 <i>y</i>	$6 \times 2y \equiv 12y$	$6 \times 2y \equiv 8y$

a) Simplify the expressions.

$$h + h + h + h + h \equiv \boxed{5h}$$
 
$$3h + 2h \equiv \boxed{5k}$$

$$4h + h \equiv \boxed{5h}$$
  $9h - 4h \equiv \boxed{5h}$ 

- b) What do you notice about your answers?
- c) Write five expressions that are equivalent to 3g.

E.g. 
$$g + g + g = 3g$$
  $10g - 7g = 3g$   
 $2g + g = 3g$   $99g - 96g = 3g$   
 $4g - g = 3g$ 

Simplify the expressions by collecting like terms.

a) 
$$p + p + p + p \equiv 4p$$

**b)** 
$$7f + 5f \equiv 12c$$

c) 
$$11g - 8g \equiv 39$$

**d)** 
$$5h + 6h + 7h \equiv \boxed{ 18h}$$

e) 
$$4n + 6n - 2n \equiv 8n$$

f) 
$$15y - y \equiv \boxed{ 149}$$

g) 
$$3u - 7u \equiv \boxed{-4u}$$

h) 
$$18y^2 + 3y^2 \equiv 21y^2$$

i) 
$$8ef - 7ef + ef \equiv 2ef$$

j) 
$$0.8m - 0.35m + 0.7m \equiv 1.15m$$

**k)** 
$$-5p + 7p \equiv 2p$$

a) Explain why you cannot simplify 3a + 2m.

and 2m are not like terms

**b)** Explain why 2b + 3 is not equivalent to 5b.

26 and 3 are not like terms so you can't collect them

c) Explain why you can simplify 7k - 3k + 2k + 3a.

You can simplify the like terms (7k, -3k so 7k-3k+2k+3a = 6k+3a

Correct Dexter's mistakes.

Dexter's working	Correct working
$7c + 6c \equiv 13c^2$	7c +6c = 13c
$2a + 3a + 2b \equiv 7ab$	2a + 3a + 2b = 5a + 2b
$3y + 2y^2 \equiv 5y^3$	3y + 2y2 = 3y + 2y2
$y + y + y + x + x + x + x \equiv 3x + 4y$	y+y+y+x+x+x=3y+4x
$2g - 10g \equiv 8g$	2g - 10g = -8g

Is it possible to simplify 3pq + 5qp? Explain your answer to a partner.

Simplify these expressions.

## Set 1

$$3a + 2a + 4b + 3b \equiv \boxed{5a + 75}$$

$$3a + 4b + 2a + 3b \equiv \boxed{5a + 7b}$$

$$4b + 2a + 3b + 3a \equiv 5a + 7b$$

$$3b + 2a + 3a + 4b \equiv 5a + 76$$

## Set 2

$$4p + 3q + 2p + 7q \equiv 6p + 10q$$

$$5p + p + 5q + 5q \equiv 6p + 10q$$

$$8p - 2p + 8q + 2q \equiv 6p + 0q$$

$$12q + 3p + 3p - 2q \equiv 6 + 10q$$

Write one more expression that would go in each set.

Simplify the expressions by collecting like terms.

a) 
$$7a + 3b + 4a + 5b$$

**b)** 
$$6g + 3h + 4h + g$$

**c)** 
$$8y + 4p - 3y + 7p - y$$

**d)** 
$$8b + 11a - 8b + a$$

**e)** 
$$9.4k + 7.8m - 5.2m - 4.9k$$

$$f) \quad 4g^3 + 3g^2 - 3g^3 + 8g^2 + g^3$$

$$2g^3 + \lg^2$$

g) 
$$3.9t + 39t - 3t^2 + 9$$

**h)** 
$$5np + 4n + 3p + 2pn$$

$$4.3g^6 - 6g + 4g^2 + 8.6g + 2.7g^2$$

i) 
$$4.3g^6 - 6g + 4g^2 + 8.6g + 2.7g^2$$
  $4.3g^6 + 6.7g^2 + 2.6g$