

Understand the meaning of equivalence

1 a) Complete the table.

Expression	Value when $y = 5$	Value when $y = 9$
$7y$	35	63
$3y$	15	27
$4y + 3y$	35	63
$10 - 3y$	-5	-17
$7y - 4y$	15	27
$y + y + y$	15	27
$3y + 4$	19	31
$4y - y$	15	27

b) Look at each column.

Which expressions give the same answers?

$7y, 4y + 3y$

$3y, 7y - 4y, y + y + y, 4y - y$

c) Why do you think this is the case?

$7y \equiv 4y + 3y$

$3y \equiv 7y - 4y \equiv y + y + y \equiv 4y - y$

2 Tick the expressions that are equal to $8p$.

$p + 7p$ ✓

$\frac{p}{8}$

$8p - p - 7p$

$11p - 3$

$4p \times 2$ ✓

$11p - 3p$ ✓

$2p \times 4p$

$4 \times 2p$ ✓

$3p - 11p$

Check your answers by substituting several values of p .

3 a) Each of these expressions should be equal to $10m$.

Complete the expressions.

$3m + \boxed{7m}$	$5m + \boxed{5m}$	$5m \times \boxed{2}$
$\boxed{4m} + 6m$	$10m$	$3m + 3m + \boxed{4m}$
$50m \div \boxed{5}$	$\boxed{16m} - 6m$	$12m - \boxed{2m}$

b) Write five expressions that are equivalent to $24ab$.

One has been done for you.

$6a \times 4b$

Eg. $24a \times b$

$20ab + 4ab$

$8a \times 3b$

$30ab - 6ab$

$6ab \times 4$

- 4 Work out the expressions below for several values of g .

$$4g + 20$$

$$4(g + 5)$$

$$4g + 5$$

What do you notice? Will this always be the case?

$$4g + 20 = 4(g + 5)$$

- 5 a) Circle the two expressions that are equivalent to $3x + 6$

$$6 + 3x$$

$$3(x + 2)$$

$$3(x + 6)$$

- b) Circle the two expressions that are equivalent to $8y - 20$

$$20 - 8y$$

$$4y + 4y - 20$$

$$2(4y - 10)$$

How did you work this out? Talk about it with a partner.

- 6 Are these statements true or false? Tick your answer.

$2x + 3x$ is equivalent to $5x$

True ☒

False ☐

$2x \times 3x$ is equivalent to $5x$

☐

☒

$7x - 2x$ is equivalent to $5x$

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☐

$7x - 2x$ is equivalent to 5

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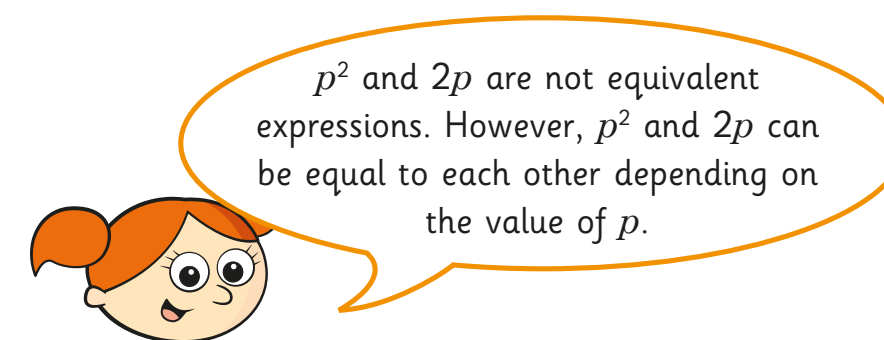
Compare answers with a partner.

- 7 Are the expressions $3a$ and a^3 equivalent? No

Explain your answer.

They have different powers.

- 8 Alex is looking at expressions.



Alex is correct. What does the value of p need to be to make the expressions equal?

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- 9 Tick the pairs of expressions that are equivalent.

$$5ab \text{ and } 5ba$$

$$5(a + b) \text{ and } 5a + b$$

$$3a + 2b \text{ and } 5ab$$

$$\frac{m}{2} \text{ and } \frac{2}{m}$$

Explain your reasoning.

Are any of these expressions equal to each other for particular values?