Understand the meaning of equivalence

1 **a)** Complete the table.

Expression	Value when $y = 5$	Value when $y = 9$
$7y$		
$3y$		
$4y + 3y$		
$10 - 3y$		
$7y - 4y$		
$y + y + y$		
$3y + 4$		
$4y - y$		

b) Look at each column.
Which expressions give the same answers?

c) Why do you think this is the case?

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.

$3m +$ ☐	$5m +$ ☐	$5m \times$ ☐
☐ $+ 6m$	$10m$	$3m + 3m +$ ☐
$50m \div$ ☐	☐ $- 6m$	$12m -$ ☐

b) Write five expressions that are equivalent to $24ab$.
One has been done for you.

$6a \times 4b$

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?

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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.

	True	False
$2x + 3x$ is equivalent to $5x$	☐	☐
$2x \times 3x$ is equivalent to $5x$	☐	☐
$7x - 2x$ is equivalent to $5x$	☐	☐
$7x - 2x$ is equivalent to 5	☐	☐

Compare answers with a partner.

7 Are the expressions $3a$ and a^3 equivalent? _____

Explain your answer.

_____

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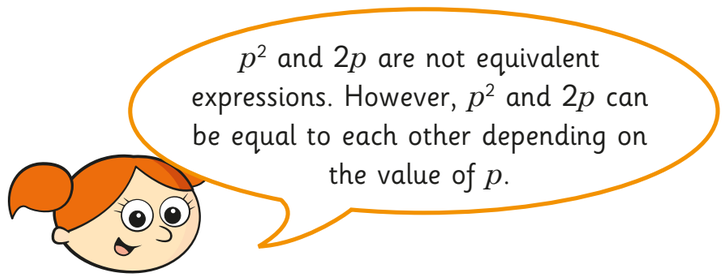
8 Alex is looking at expressions.



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.

$5ab$ and $5ba$ $5(a + b)$ and $5a + b$

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

Explain your reasoning.

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