

ANSWER KEY

REVISION QUESTIONS:
① why is your answer different from the one on the answer key?
② what do you need to remember for next time?

When are the equations true?

1. Amy and Ben are trying to decide when the following equation is true:

$$5 - x = 6$$

They decide to compare their work.

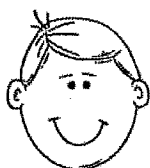


Amy

$$5 - x = 6$$

$$\text{so } x = 6 - 5 = 1$$

so it is true when $x = 1$



Ben

If you take a number away from 5 the answer will be less than 5 so its never true.

Are Amy and Ben correct?

If not, where have they gone wrong?

Amy: She forgot the negative before the x after subtracting 5 from both sides.

Ben: He forgot that subtracting a negative is the same as adding.

What is your answer to the question?

$$\begin{array}{r} 5 - x = 6 \\ -5 \quad -5 \\ \hline \end{array}$$

$$-x = 1$$

$$\begin{array}{r} -1 \quad -1 \\ \hline \end{array}$$

$$\boxed{x = -1}$$

2. Amy and Ben now try to decide when the following equation is true:

$$8x - 6 = 2x$$

Comment on their work and identify any mistakes they have made.

Amy's work:

8x and 6 are not "like terms"
If the equation was $8x - 6x = 2x$
then it would be always true

Even though they are not
like terms, the equation can still
be solved.

This will be a single solution
instead of a infinite solutions.

Ben's work:

When $x=0$ $0-6 \neq 0$
When $x=1$ $8-6 = 2 \checkmark$
When $x=2$ $16-6 \neq 4$
It doesn't work for all
values of x , just for some.

He found the single solution
but states there are "some".
There can either be one, no,
a zero, or infinite solutions.

What is your answer to the question?

$$8x - 6 = 2x$$

$$\begin{array}{r} +6 \\ \hline \end{array}$$

$$8x = 2x + 6$$

$$\begin{array}{r} -2x \\ \hline \end{array}$$

$$\frac{6x}{6} = \frac{6}{6}$$

$$\boxed{x=1}$$

When are the equations true? (revisited)

1. Try to decide when the following equations are true.
The first one has been done as an example.

	Equation	For what values of x is it true?
	$6x+3=15$	<i>This is only true when $x = 2$.</i>
1.	$12-x=15$	<i>one solution: $x=3$</i>
2.	$x-3=3-x$	<i>one solution $x=3$</i>
3.	$\frac{x}{2}=6$	<i>one solution $x=12$</i>
4.	$\frac{10}{x}=20$	<i>one solution $x=\frac{1}{2}$</i>
5.	$3(\overset{\curvearrowright}{x}+\overset{\curvearrowright}{4})=3x+4$	<i>no solution</i>
6.	$2(\overset{\curvearrowright}{x}+\overset{\curvearrowright}{3})=2x+6$	<i>infinite solutions</i>

$$\begin{array}{r} 12-x=15 \\ +x \quad +x \\ -15 \quad -15 \\ \hline -3=x \end{array}$$

$$\begin{array}{r} x-3=3-x \\ +x \quad +x \\ +3 \quad +3 \\ \hline 2x=6 \\ x=3 \end{array}$$

$$2 \cdot \frac{x}{2} = 6 \cdot 2 \\ x = 12$$

$$x \cdot \frac{10}{x} = 20 \cdot x \\ \frac{10}{20} = \frac{20x}{20} \\ \frac{1}{2} = x$$

$$\begin{array}{r} 3x+12=3x+4 \\ -3x \quad -3x \\ \hline 12 \neq 4 \end{array}$$

$$2x+6=2x+6$$