

- 2 What exponent goes in the box to make the following equation true?

$$\frac{x^{\square}x^6}{x^2} = x^{12}$$

a 9

b 8

c 4

d 3

Learning Goals

1. To understand that adding and subtracting are inverses or opposites of each other.
2. To understand that multiplying and dividing are inverses or opposites of each other.
3. To understand that to isolate for a variable you use SAMDEB.
4. To check your work by showing that left side = right side.

4.2 - Using Inverse Operations - "SAMDEB"

Inverse Operations - operations that undo or are opposite.

For example, division and multiplication are opposite or inverses. Adding and subtracting are also inverses.

Today's lesson is about isolating for a variable using inverse operations. Always use SAMDEB (which is working backwards through BEDMAS).

Example One

Solve and check. $-2x + 4 = 14$

1. Follow SAMDEB.

$$-2x + 4 = 14$$

$$-2x = 14 - 4$$

$$\frac{-2x}{-2} = \frac{10}{-2}$$

$$x = -5$$

Check

$$-2(-5) + 4 = 14 \quad \leftarrow \text{Plug "x" into original question}$$

$$10 + 4 = 14$$

$$14 = 14$$

$$LS = RS$$

$\therefore x = -5$ is the correct answer

Example Two *With a fraction*Solve and check. $\frac{w}{3} - 13 = 7$ 1. Follow **SAMDEB**.

$$\frac{w}{3} - 13 = 7$$

$$\frac{w}{3} = 20$$

$$w = 60$$

Check

$$\frac{60}{3} - 13 = 7$$

$$20 - 13 = 7$$

$$7 = 7$$

$$LS = RS$$

$\therefore w = 60$ is
the correct
answer.

Example Three *With a fraction*Solve and check. $\frac{(y-5)}{3} = 6$ 1. Follow **SAMDEB**.

$$\frac{(y-5)}{3} = 6$$

$$(y-5) = 18$$

$$y = 23$$

Check

$$\frac{(23-5)}{3} = 6$$

$$\frac{18}{3} = 6$$

$$6 = 6$$

$$LS = RS$$

$\therefore y = 23$ is
the correct
answer.

Example Four

A photographer charges a sitting fee of \$100. The first 4 prints are free. Each additional print costs \$5.25. How many prints can you buy with \$257.50?

$$257.50 = 100 + 5.25(p-4)$$

where $p \geq 4$

$$\frac{157.50}{5.25} = \frac{5.25(p-4)}{5.25}$$

$$30 = (p-4)$$

$$p = 34$$

Check

$$257.50 = 100 + 5.25(34-4)$$

$$257.50 = 100 + 5.25(30)$$

$$257.50 = 100 + 157.50$$

$$257.50 = 257.50$$

$$LS = RS$$

$\therefore x = 34$ is the correct answer.

Complete: p. 210 - 211 #1 - 3, 5, 6, 10ace, 12ace.