

1. Solve for y .

a) $y + 6 = 8$

b) $y - 2 = 7$

c) $2y = 10$

2. Solve for x .

a) $2x + 6 = 12$

b) $10 + 5x = 40$

c) $11 + 4x = 27$

3. **Achievement Check** Solve $3x - 2 = x + 4$ in two different ways.

4. A square has a side length of s . The perimeter of the square is 28 centimetres. What is the side length of the square?



5. A cell phone plan costs \$90 for the phone and \$22 per month. Use the equation $90 + 22m = 354$ to calculate how many months it takes to reach a total cost of \$354.

6. When ordering online, the total cost of three hockey tickets is \$160. This total includes a \$10 service charge. Write an equation and solve it to determine the cost of each hockey ticket, not including the service charge.

7. You buy 6 T-shirts and a \$42 pair of jeans and spend a total of \$168.

a) Write an equation to model the situation.

b) Solve the equation to determine the cost of each T-shirt.

8. Solve for b .

a) $2b + 1 = b - 8$

b) $10b + 30 = 12b - 20$

c) $7b - 9 = 2b + 6$

9. a) Is $x = -9$ the solution to $3x + 10 = 5x - 8$?

b) Why or why not? Explain your answer in two different ways.

10. **EQAO** Which of the following is the value of x in $2x - 9 = 6$?

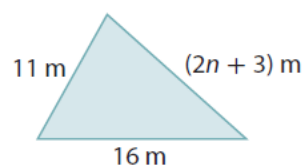
A $x = \frac{3}{2}$

B $x = \frac{15}{2}$

C $x = 3$

D $x = 7$

11. The perimeter of the triangle shown is 40 metres. Write a formula and solve it to determine the value of n .



12. Jane's backyard swimming pool has a maximum depth of 1.2 m. She measures the depth of the water to be 71 cm. She starts to fill the pool. After an hour, the depth of the water is 75 cm. How much longer will it take to fill the pool? **Hint:** 1 m = 100 cm.



13. **EQAO** What value of x satisfies the equation $6x - 7 = x + 8$?

- A $x = 3$
 B $x = 4$
 C $x = 5$
 D $x = 7$

Reflect

- R1. Viktor shows the following steps to solve the equation $6x + 4 = 10$.

Explain Viktor's error.

$$\begin{aligned} 6x + 4 - 4 &= 10 - 4 \\ 6x &= 6 \\ x &= 6 \times 6 \\ x &= 36 \end{aligned}$$

- R2. A friend missed the math class about reverse order of operations. Explain how you use it to solve multi-step equations. Include an example.
- R3. Explain how you can determine if $x = 5$ is a solution to the equation $3x + 4 = x - 6$ without solving the equation.

ANSWERS

1. a) $y = 2$ b) $y = 9$ c) $y = 5$
 2. a) $x = 3$ b) $x = 6$ c) $x = 4$
 3. $x = 3$ 4. 7 cm

5. 12 months 6. \$53.33

7. a) $6n + 42 = 168$, where n is the cost of a T-shirt, in dollars.
 b) \$21

8. a) $b = -9$ b) $b = 25$ c) $b = 3$

9. a) No

b) Solving for x , the correct solution is $x = 9$. You could also substitute the value into both sides of the equation to see if they are equal.

10. B

11. $40 = 11 + (2n + 3) + 16$; $n = 5$

12. 11.25 h 13. A

Reflect

- R1. In line 3, Viktor should have divided by 6, not multiplied by 6.

- R2. Answers may vary. The reverse order of operations is
- add and/or subtract
 - multiply and/or divide
 - brackets

To keep the equation balanced, you have to perform the same operation on both sides of the equal sign. Examples may vary.

- R3. You could substitute $x = 5$ into both sides of the equation to see if it makes the equation true.