

Warm-up Thursday April 24

10 What is the value of $\frac{4^3 \cdot 4^{-1} \cdot 5^{-2}}{4^4 \cdot 5^{-3} \cdot 5^0}$?

11 When 8 is added to the number that is produced by doubling the number x , the result is equal to 8 times the number that is 5 less than x . What is the value of x ?

10 What is the value of $\frac{4^3 \cdot 4^{-1} \cdot 5^{-2}}{4^4 \cdot 5^{-3} \cdot 5^0}$? or $\frac{5}{16}$

$$\frac{4^3 \cdot 5^3}{4^4 \cdot 4^1 \cdot 5^2 \cdot 5^0} = \frac{\cancel{4^3} \cdot \cancel{5^3} 5}{\cancel{4^3} \cdot \cancel{5^2} 4^2} = \frac{5}{16}$$

11 When 8 is added to the number that is produced by doubling the number x, the result is equal to 8 times the number that is 5 less than x. What is the value of x?

$$2x + 8 = 8(x - 5)$$

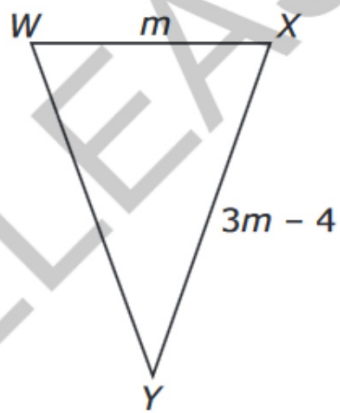
$$2x + 8 = 8x - 40$$

$$8 = 6x - 40$$

$$48 = 6x$$

$$8 = x$$

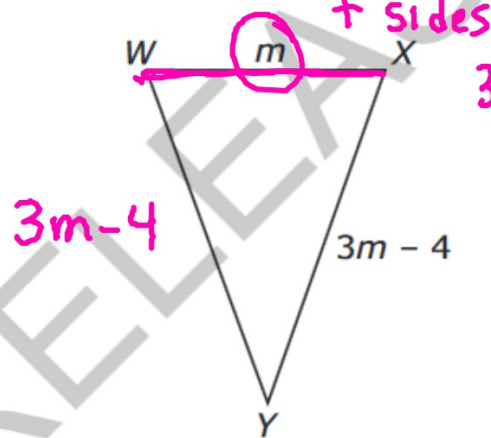
- 12 In $\triangle WXY$, \overline{WY} is congruent to \overline{XY} . The perimeter of $\triangle WXY$ is 76 inches.



How many inches long is \overline{WX} ?



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$3m-4 + 3m-4 + m = 76$
 $7m - 8 = 76$
 $7m = 84$
 $m = 12$

How many inches long is \overline{WX} ?

$\overline{WX} = m = 12$

13 Kyle is a salesman. His monthly earnings include a fixed monthly salary and a commission that is a fixed percentage of his total sales for the month.

- Kyle's total sales for the month of January were \$15,000, and his total earnings for that month were \$2,550.
- Kyle's total sales for the month of February were \$25,000, and his total earnings for that month were \$3,050.

What is Kyle's fixed monthly salary in dollars?

14 In the table below, y is a linear function of x .

x	y
3	5
5	-3
7	-11

What is the value of y when $x = 0$?

13 Kyle is a salesman. His monthly earnings include a fixed monthly salary and a commission that is a fixed percentage of his total sales for the month.

- Kyle's total sales for the month of January were \$15,000, and his total earnings for that month were \$2,550.
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What is Kyle's y-int. monthly salary in dollars?

$$y = mx + b$$

$$2550 = .05(15000) + b$$

$$2550 = 750 + b$$

$$1800 = b$$

$$\begin{array}{r} (15,000, 2,550) \\ - (25,000, 3,050) \\ \hline -10,000, -500 \\ m = \frac{500}{10000} = .05 \end{array}$$

14 In the table below, y is a linear function of x .

x	y
1	13
3	5
5	-3
7	-11

Handwritten annotations: -1 (between x=1 and x=3), -2 (between x=3 and x=5), $+2$ (between x=5 and x=7); $+4$ (between y=13 and y=5), $+8$ (between y=5 and y=-3), -8 (between y=-3 and y=-11).

What is the value of y when $x = 0$?

y-int. $y = 17$

**Homework Check:
Exponents Practice
#10 #19**

EXPONENTS PRACTICE ANSWERS

1. 192

2. $8x^6$

3. x^8

4. $4x^5$

5. 36

6. $\frac{1}{x^3}$

7. 1

8. -1

9. y^{12}

10. x^8y^4

11. $3x^3$

12. $2x^3$

13. $4c^7d^{13}$

14. $16f^{10}g^{22}$

15. x^4y^4

16. xy

17. $\frac{x^{12}}{64y^9}$

18. $\frac{x^8}{256y^{16}}$

19. $\frac{1}{y^7}$

20. $\frac{1}{49}$

21. x^5

22. 16

23. x^4

24. $\frac{1}{x^6}$

25. x^2

26. $\frac{1}{j^3}$

27. x^7

28. $4x^{13}$

29. $\frac{1}{f^4}$

30. x^5

31. $2x^{14}$

32. $\frac{1}{4x^4y^6}$

33. $\frac{y^6}{4x^6}$

34. $\frac{1}{4x^3y^7}$

35. $\frac{64x^{12}}{y^{12}}$

36. $\frac{10x^6}{y^2}$

37. $\frac{81a^4b^4c^{12}}{2401}$

38. $\frac{9b^2c^{14}}{4a^2}$

Solving Equations

We get the variable by itself when solving equations.

solution to an equation - the value(s) that make the equation true

There are three solutions to equations:

- 1) one solution - a variable equals a number
- 2) no solution - a number equals a different number
- 3) many solutions - a number or variable equals itself

We use inverse operations to solve equations.

Addition -> Subtraction

Multiplication -> Division

Squaring a number -> take the square root (calculator $^{(1/2)}$)

Cubing a number -> take the cubed root (calculator $^{(1/3)}$)

Steps to solving equations

- 1) Simplify
 - a) distribute
 - b) collect like terms
 - c) get variables on the same side
 - d) multiply by a common denominator
- 2) Clear all addition or subtraction
- 3) Clear all multiplication or division

Try These.

Ex. 1) $x + 6 = 5$

(subt. prop.) $x + 6 - 6 = 5 - 6$
 $x = -1$

Ex. 2) $\frac{5}{6}x = 3$

$\frac{6}{5} \cdot \frac{5}{6}x = \frac{6}{5} \cdot 3$ (mult. prop.)
 $x = \frac{18}{5}$

Ex. 3) $-9 - p = 30$

$$-9 + 9 - p = 30 + 9 \text{ (add. prop.)}$$

$$-p = 39$$

$$\frac{-p}{-1} = \frac{39}{-1} \text{ (div. prop.)}$$

$$p = -39$$

Ex. 4) $4t - 7 = 5$

$$4t - 7 + 7 = 5 + 7 \text{ (add. prop.)}$$

$$4t = 12$$

$$\frac{4t}{4} = \frac{12}{4} \text{ (div. prop.)}$$

$$t = 3$$

Ex. 5) $7 = 3 - \frac{n}{3}$

$$7 - 3 = 3 - 3 - \frac{n}{3} \text{ (subt. prop.)}$$

$$4 = -\frac{n}{3}$$

$$4 \cdot -3 = -3 \cdot -\frac{n}{3} \text{ (mult. prop.)}$$

$$-12 = n$$

Ex. 6) $5 = \frac{m-5}{4}$

$$5 \cdot 4 = 4 \cdot \frac{m-5}{4} \text{ (mult. prop.)}$$

$$20 = m - 5$$

$$20 + 5 = m - 5 + 5 \text{ (add. prop.)}$$

$$25 = m$$

$$\text{Ex. 7) } x^2 + 1 = 10$$

$$x^2 + 1 - 1 = 10 - 1 \quad (\text{subt. prop.})$$

$$x^2 = 9$$

$$\sqrt{x^2} = \sqrt{9}$$

$$x = \pm 3$$

$$\text{Ex. 8) } x^3 - 14 = 13$$

$$(\text{add. prop.}) \quad x^3 - 14 + 14 = 13 + 14$$

$$x^3 = 27$$

$$\sqrt[3]{x^3} = \sqrt[3]{27}$$

$$x = 3$$

$$\text{Ex. 9) } 2x^2 - 4 = 28$$

$$\text{Ex. 9) } 36 - 2x^3 = 20$$