

Term 3 Review Part 2

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Mathematics 9 Term 3 Review Part 2

A. EQUATION SOLVING

Solve and check the following equations.

$$1) 4(y+1) = 2(11-y)$$

$$4y + 4 = 22 - 2y$$

$$6y + 4 = 22$$

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

$$y = 3$$

Check

$$4(y+1) = 2(11-y)$$

$$4((3)+1) = 2(11-(3))$$

$$4(4) = 2(8)$$

$$16 = 16 \checkmark$$

$$2) \left[\frac{1}{2} - y\right]^6 = \left[\frac{1}{6}\right]^6$$

$$-6y = -\frac{1}{3}$$

$$-y = \frac{-1}{-6}$$

$$y = \frac{2}{3}$$

Check

$$\frac{1}{2} - y = -\frac{1}{6}$$

$$\frac{1}{2} - \left(\frac{2}{3}\right) = -\frac{1}{6}$$

$$\frac{3}{6} - \frac{4}{6} = -\frac{1}{6}$$

$$-\frac{1}{6} = -\frac{1}{6} \checkmark$$

Solve following equations. You do not need to provide a check.

$$1) \frac{x+3}{5} = \frac{2x-6}{3}$$

$$\frac{x}{5} + \frac{3}{5} = \frac{2x}{3} - \frac{6}{3}$$

$$15 \left[\frac{1}{5}x + \frac{3}{5} \right] = \left[\frac{2}{3}x - 2 \right] 15$$

$$3x + 9 = 10x - 30$$

$$-7x + 9 = -30$$

$$-7x = -39$$

$$x = \frac{39}{7} \text{ or } 5\frac{4}{7}$$

$$2) 3m + \frac{1}{2}(4m+1) - 4 = 2 + \frac{1}{4}(m-3) - 4$$

$$4 \left[3m + 2m + \frac{1}{2} - 4 \right] = \left[2 + \frac{1}{4}m - \frac{3}{4} - 4 \right] \cdot 4$$

$$(12m) + (8m) + 2 - 16 = (8) + m(-3) - 16$$

$$20m - 14 = m - 11$$

$$-m$$

$$19m - 14 = -11$$

$$+14$$

$$\frac{19m}{19} = \frac{3}{19}$$

$$m = \frac{3}{19}$$

B. SOLVING INEQUALITIES

Solve and graph each of the following inequalities.

$$1) 4x + 6 \leq 2x + 14$$

$$-2x$$

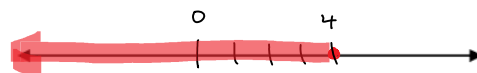
$$2x + 6 \leq 14$$

$$-6$$

$$\frac{2x}{2} \leq \frac{8}{2}$$

$$x \leq 4$$

less than



$$2) (5x) - 3 < (-2x) + 3 + 7x - 2$$

$$-7x$$

$$3x - 3 > 7x + 1$$

$$-7x$$

$$-4x - 3 > 1$$

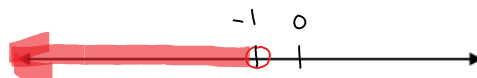
$$+3$$

$$-4x > 4$$

$$-4$$

$$x < -1$$

less than



C. WORD PROBLEMS

Solve the following. Make sure to include let statements, equation, solution and answer in sentence.

1. One number is three times greater than another number. (If the smaller plus sixteen) is equaled to (the larger number plus four) what are the numbers?

x = another number (smaller)
 $3x$ = one number (larger)

$$\begin{aligned} x + 16 &= 3x + 4 \\ -3x & \\ \hline -2x + 16 &= 4 \\ -16 & \\ \hline -2x &= -12 \\ \div 2 & \\ \hline x &= 6 \end{aligned}$$

The numbers are 6 & 18

2. Max is ten years older than Cindy? Five years ago Cindy was half as old as Max. How old is each person now?

x = Cindy's age now
 $x + 10$ = Max's age now

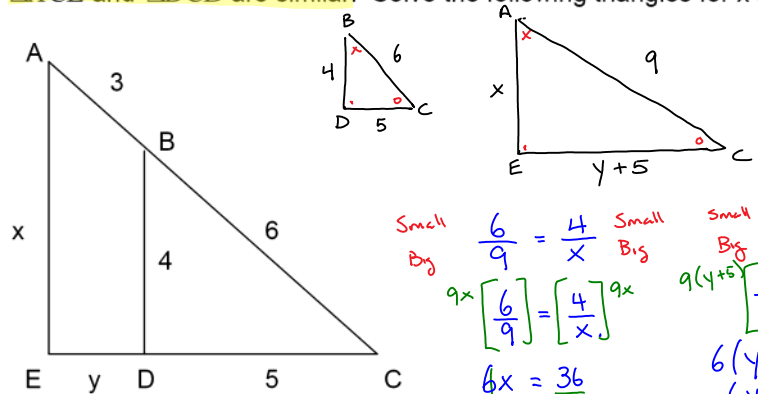
Name	Now	5 yr. ago
Cindy	x	$x - 5$
Max.	$x + 10$	$x + 10 - 5$

$$\begin{aligned} x - 5 &= \frac{1}{2}(x + 10 - 5) \\ 2[x - 5] &= \left[\frac{1}{2}x + 5 - \frac{5}{2}\right] \cdot 2 \\ 2x - 10 &= x + 10 - 5 \\ 2x - 10 &= x + 5 \\ -x & \\ \hline x - 10 &= +5 \\ +10 & \\ \hline x &= 15 \end{aligned}$$

Cindy is 15
 Max is 25.

D. SIMILAR TRIANGLES

1. The $\triangle ACE$ and $\triangle BCD$ are similar. Solve the following triangles for x and y .



Small Big $\frac{6}{9} = \frac{4}{x}$ Small Big $\frac{6}{9} = \frac{5}{y+5}$ Small Big $\frac{6}{9} = \frac{5}{y+5}$

$$9x \left[\frac{6}{9} \right] = \left[\frac{4}{x} \right] 9x$$

$$\frac{6x}{9} = \frac{36}{6}$$

$$x = 6$$

$$9(y+5) \left[\frac{6}{9} \right] = \left[\frac{5}{y+5} \right] 9(y+5)$$

$$6(y+5) = 45$$

$$6y + 30 = 45$$

$$6y = 15$$

$$y = \frac{5}{2} \text{ or } 2\frac{1}{2}$$

Assignment : Term 3 Review Part 2 Assignment

Name: _____

Term 3 Review Part 2 Assignment

Solve and check the following equations.

1. $2(x - 5) = -16$	<u>Check</u>
2. $-\frac{1}{2}m - 6 = 2$	<u>Check</u>
3. $6y - 4 = 5$	<u>Check</u>

4. $5(m+1) = -2(m+8)$

Check

5. $4y - 6 = 8y - 8$

Check

6. $3 - (a - 1) = 5 + 2(a + 4)$

Check

Solve the following equations. You do not need to provide a check.

7. $3(2a+3)+5=2a-9$

8. $\frac{1}{2}-\frac{1}{3}x-2=\frac{1}{2}x+1+\frac{1}{3}x$

Solve and graph the following inequalities.

9. $5 + x > 7$



10. $6 - 2x \geq 10$



11. $3 - (x - 1) \leq 5 + 2(x + 4)$



12. $2 \geq \frac{2}{3}x + 6$



Solve the following. Make sure to include let statements, equation, solution and answer in sentence.

13. One number is six times larger than another number. If you subtract the smaller number from the larger number the result is 20. What is the numbers?

14. Four consecutive numbers have a total of 38. What are the numbers?

15. Lake Corn is six times as deep as Lake Wilson. If the difference in their depths is 45 m, how deep is each lake?

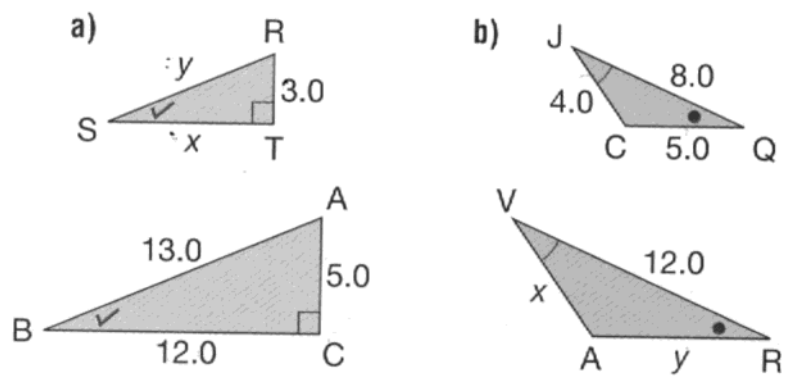
16. Bill is twice as old as his brother Dan. In seven years, Bill will be only one and one-half times as old as Dan. How old is Bill now?

17. The length of a rectangle exceeds the width by thirteen. If the perimeter of the rectangle is 42 mm, determine the length and width.

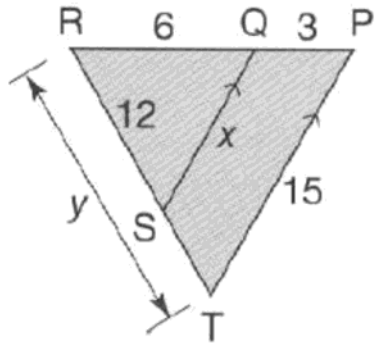
18. Find 3 consecutive even numbers so that when you multiply the smaller number by five and subtract twenty-four it equals twice the middle number and the larger number combined.

19. The difference in a number and five divided by two is equaled to the same number minus eight. What is the number?

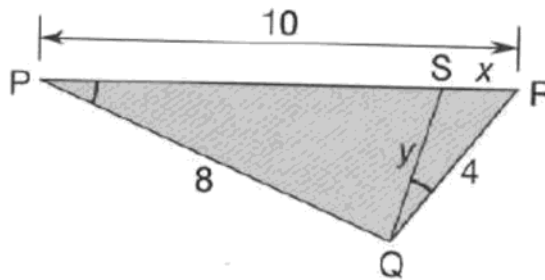
20. Each pair of triangles is similar. Use a proportion to solve for x and y .



21. The $\triangle SQR$ is similar to $\triangle TPR$. Find the length of the missing values of x and y .



22. The $\triangle SQR$ is similar to $\triangle QPR$. Find the length of the missing values of x and y .



Answers

1) $x = -3$

2) $m = -16$

3) $y = \frac{3}{2}$

4) $m = -3$

5) $y = \frac{1}{2}$

6) $a = -3$

7) $a = -\frac{23}{4}$

8) $x = -\frac{15}{7}$

9) $x > 2$

10) $x \leq -2$

11) $x \geq -3$

12) $x \leq -6$

13) Numbers are 4 & 24

14) Numbers are 8, 9, 10 & 11

15) Lake Wilson is 9 m
Lake Corn is 54 m

16) Bill is 14 years old

17) Width is 4 mm
Length is 17 mm

18) Numbers are 36, 38, & 40

19) Number is 11

20) a) $x = \frac{36}{5}$ or $7\frac{1}{5}$, $y = \frac{39}{5}$ or $7\frac{4}{5}$

b) $x = 6$, $y = \frac{15}{2}$ or $7\frac{1}{2}$

21) $x = 10$, $y = 18$

22) $x = \frac{8}{5}$ or $1\frac{3}{5}$, $y = \frac{16}{5}$ or $3\frac{1}{5}$