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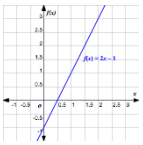
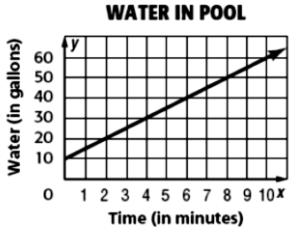


Algebra U7L5 - Parallel and Perpendicular Lines

Warm Up…

A.3C – real world linear funtions:

Ramon is adding water to his swimming pool. The graph below shows the amount of water in the pool as more water is added.



What does the *y*-intercept represent?

A. the additional gallons of water added per minute

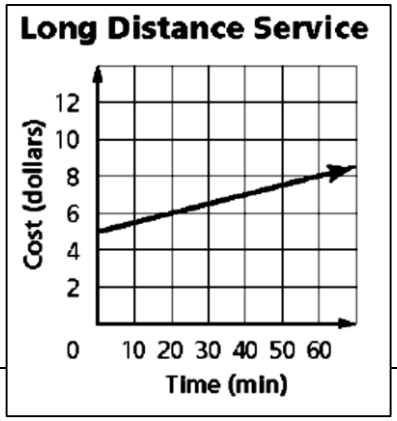
B. the total time needed to fill the pool

C. the amount of water in the pool before more water was added

D. the total amount of water needed to fill the pool

A.2C – write equation from table or graph:

Write an equation for the situation represented in the graph at the bottom of this box



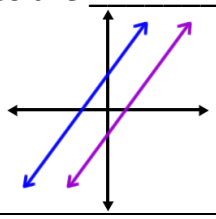
Recent Review:

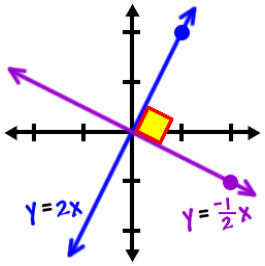
Today's Goal:

- KWBAT write the equation of a line that contains a given point and is parallel to or perpendicular to a given line
- WHY? This lesson covers Algebra standards A.2E and A.2F. We already know quite a few things about parallel lines (they never intersect and they have the same slope!) but today we will be able to write equations of lines that are parallel or perpendicular

Important Info:

The slopes of **Parallel Lines** are _____





The slopes of **Perpendicular Lines** are

_____ (change the sign) _____ (flip the fraction)

**Perpendicular means the two lines form a 90° angle*

Examples:

1. Write in slope-intercept form the equation of the line that is <u>parallel</u> to the line $y = 2x - 3$ and passes through the point (5, 4).

2. Write in slope-intercept form the equation of the line that is <u>perpendicular</u> to the line $y = -4x + 10$ and passes through the point (7, 2).

What Did the Policeman Tell The Burglar in the Bathroom?

Find the answer for each exercise in the adjacent answer columns. Write the letter of the exercise in the box containing the number of the answer.

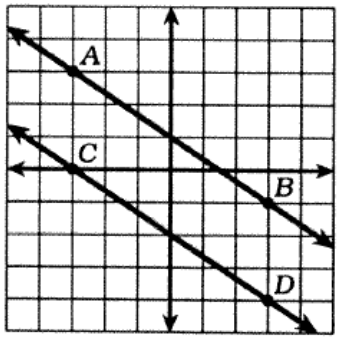
Part 1. Write the equation of the line indicated.

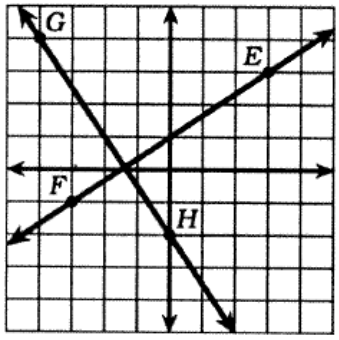
U Equation of $\overleftrightarrow{AB}$

O Equation of $\overleftrightarrow{CD}$

I Equation of $\overleftrightarrow{EF}$

S Equation of $\overleftrightarrow{GH}$





Part 1 Answers

11 $y = \frac{2}{3}x + 1$

17 $y = -\frac{2}{3}x + 1$

24 $y = -\frac{3}{2}x - 2$

20 $y = -\frac{3}{2}x + 1$

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

Part 2. Write the slope of a line parallel to the given line.

T $y = \frac{7}{4}x - 2$

U $y = 8 - 3x$

O $-5x + y = 12$

A $4x + 7y = 21$

Part 2 Answers

18 $\frac{12}{5}$ **8** $\frac{7}{4}$ **10** $-\frac{7}{4}$

6 5 **21** $-\frac{4}{7}$ **26** -3

Part 3. Write the slope of a line perpendicular to the given line.

E $y = -\frac{5}{4}x + 1$

H $y = 6x + 11$

O $2x + 5y = 40$

T $8x - 3y = 15$

Part 3 Answers

3 $\frac{5}{4}$ **23** $-\frac{3}{8}$ **13** $-\frac{1}{6}$

16 $\frac{5}{2}$ **4** $\frac{4}{5}$ **15** $-\frac{8}{3}$

Part 4. Write an equation for the line that is parallel to the given line and that contains the given point.

W $y = 3x - 4; (2, 7)$

Y $y = -\frac{1}{2}x + 5; (4, -5)$

C $4x + y = -9; (-2, 9)$

R $-5x + 3y = 6; (-3, -8)$

P $x + y = 7; (-4, 0)$

Part 4 Answers

1 $y = -4x + 1$ **18** $y = \frac{5}{3}x - 3$

12 $y = -\frac{1}{2}x - 1$ **10** $y = 3x + 1$

9 $y = -x + 2$ **19** $y = -4x - 7$

15 $y = -\frac{1}{2}x - 3$ **27** $y = -x - 4$

7 $y = 3x - 2$ **14** $y = \frac{5}{3}x - 8$

Part 5. Write an equation for the line that is perpendicular to the given line and that contains the given point.

U $y = -\frac{1}{3}x + 4; (2, 5)$

T $y = \frac{2}{5}x - 3; (2, -3)$

P $y = \frac{x}{4} + 15; (-3, 7)$

M $3x + 2y = -10; (-9, -2)$

N $5x - y = 16; (0, 0)$

Part 5 Answers

14 $y = -\frac{5}{2}x + 7$ **3** $y = \frac{2}{3}x + 4$

20 $y = -4x - 5$ **25** $y = 3x - 5$

9 $y = -\frac{1}{5}x + 5$ **12** $y = -\frac{5}{2}x + 2$

19 $y = -4x - 3$ **7** $y = 3x - 1$

22 $y = -\frac{1}{5}x$ **5** $y = \frac{2}{3}x + 6$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

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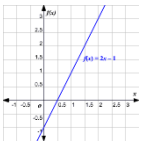


EXIT TICKET - Algebra U7L5 - Parallel and Perpendicular Lines

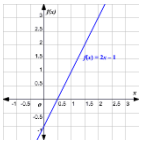
Write in slope-intercept form the equation of the line that is parallel to the given line and passes through the given point.

4. $y = 3x + 2$ and $(-2, 1)$

Write in slope-intercept form the equation of the line that is perpendicular to the given line and passes through the given point

5. $y = \frac{2}{5}x - 3$ and (2, -3)

Name _____ Date: _____ Pd: _____



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