

December 10, 2018 Monday

★ Recall the slope-intercept form of a line is: $y = mx + b$

Write the slope-intercept form of the equation of each line given the slope and y-intercept.

1) Slope $\frac{3}{2}$, y-intercept = -1 $y = \frac{3}{2}x - 1$
 2) Slope $-\frac{3}{5}$, y-intercept = 0 $y = -\frac{3}{5}x + 0$

Write the slope-intercept form of the equation of each line.

3) $3x + 2y = 10$
 $2y = -3x + 10$
 $y = -\frac{3}{2}x + 5$

4) $13x + 2y = 12$
 $2y = -13x + 12$
 $y = -\frac{13}{2}x + 6$

5) $y = \frac{3}{2}x + 1$
 $y = 0x + 1$
 $y = 0 + 1$
 $y = 1$

6) $y = mx + b$
 $y = 0x + 1$
 $y = 0 + 1$
 $y = 1$

7) $m = \frac{\text{rise}}{\text{run}}$
 $y = \frac{1}{2}x + 5$
 $y = -2x + 5$

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Write the slope-intercept form of the equation of each line given the slope and y-intercept.

1) Slope $\frac{3}{2}$, y-intercept = -1 $y = \frac{3}{2}x - 1$
 2) Slope $-\frac{3}{5}$, y-intercept = 0 $y = -\frac{3}{5}x$

Write the slope-intercept form of the equation of each line.

3) $3x + 2y = 10$ $y = -\frac{3}{2}x + 5$
 4) $13x + 2y = 12$ $y = -\frac{13}{2}x + 6$

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

6) $y = 1$

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Geometry Name _____ ID: 1

Recalling graphs of Linear Equations Date _____ Period _____

Sketch the graph of each line.

1) $y = \frac{1}{4}x + 3$ $m = \frac{1}{4}$ rise, $b = 3$ run
 2) $y = -\frac{3}{2}x + 1$ $m = -\frac{3}{2}$ run, $b = 1$ rise

3) $x + 2y = -2$
 $2y = -x - 2$
 $y = -\frac{1}{2}x - 1$
 $m = -\frac{1}{2}$, $b = -1$

4) $x - 4y = -4$
 $-4y = -x - 4$
 $y = \frac{1}{4}x + 1$
 $m = \frac{1}{4}$, $b = 1$

5) $-y = 2x + 1$
 $y = -2x - 1$
 $m = -2$, $b = -1$

6) $0 = -y - 4$
 $-y = -4$
 $y = 4$

Geometry Name _____ ID: 1

Recalling graphs of Linear Equations Date _____ Period _____

Sketch the graph of each line.

1) $y = \frac{1}{4}x + 3$
 2) $y = -\frac{3}{2}x + 1$

3) $x + 2y = -2$
 4) $x - 4y = -4$

5) $-y = 2x + 1$
 6) $0 = -y - 4$

Geometry Name _____ ID: 1

Recalling how to find slope

Find the slope of each line.

1) $m = \frac{y_2 - y_1}{x_2 - x_1}$
 $m = \frac{1 - 0}{4 - 0} = \frac{1}{4}$

2) $m = \frac{1 - 0}{-4 - 0} = -\frac{1}{4}$

3) $m = \frac{2 - 0}{0 - 0}$ undefined

4) $m = \frac{2 - 0}{2 - 0} = 1$

Find the slope of the line through each pair of points.

5) $(-5, 14), (8, -9)$
 $m = \frac{-9 - 14}{8 - (-5)} = \frac{-23}{13}$

6) $(2, -4), (-18, -2)$
 $m = \frac{-2 - (-4)}{-18 - 2} = \frac{2}{-20} = -\frac{1}{10}$

7) $y = -\frac{1}{4}x + 5$
 8) $y = -9x - 5$

Find the slope of a line parallel to each given line.

9) $y = 5x$
 10) $y = x - 2$

Find the slope of a line perpendicular to each given line.

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

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Geometry Name _____ ID: 1

Recalling how to find slope

Find the slope of each line.

1) $m = \frac{1 - 0}{4 - 0} = \frac{1}{4}$

2) $m = \frac{1 - 0}{-4 - 0} = -\frac{1}{4}$

3) $m = \frac{2 - 0}{0 - 0}$ Undefined

4) $m = \frac{2 - 0}{2 - 0} = 1$

Find the slope of the line through each pair of points.

5) $(-5, 14), (-8, -9)$
 $m = \frac{-9 - 14}{-8 - (-5)} = \frac{-23}{-3} = \frac{23}{3}$

6) $(2, -4), (-18, -2)$
 $m = \frac{-2 - (-4)}{-18 - 2} = \frac{2}{-20} = -\frac{1}{10}$

Find the slope of each line.

7) $y = -\frac{1}{4}x + 5$
 $m = -\frac{1}{4}$

8) $y = -9x - 5$
 $m = -9$

Find the slope of a line parallel to each given line.

9) $y = 5x$
 $m = 5$

10) $y = x - 2$
 $m = 1$

Find the slope of a line perpendicular to each given line.

11) $y = \frac{1}{2}x$
 $m = -2$

12) $y = \frac{2}{3}x + 1$
 $m = -\frac{3}{2}$

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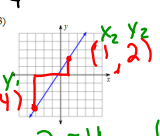
December 11, 2018 Tuesday

$m = \frac{y_2 - y_1}{x_2 - x_1}$ $y = mx + b$

Find the slope of the following.

1) $(1, 13), (-19, 8)$ $\frac{8-13}{-19-1} = \frac{-5}{-20} = \frac{1}{4}$

2) $y = 5$ $m = 0$

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

4) $y = 0$ $m = 4$

bound

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Parallel and Perpendicular Lines

$y = mx + b$, slope m . *Parallel lines have the same slope. Perpendicular lines have the negative reciprocal slope.*

Equation	Slope (m)	Parallel Slope (l)	Perpendicular Slope (p)
1) $y = 8x + 9$	8	8	$-\frac{1}{8}$
2) $y = \frac{5}{6}x - 4$	$\frac{5}{6}$	$\frac{5}{6}$	$-\frac{6}{5}$
3) $y = -4x + 13$	-4	-4	$\frac{1}{4}$
4) $y = \frac{7}{9}x - 4$	$\frac{7}{9}$	$\frac{7}{9}$	$-\frac{9}{7}$
5) $-3x + 6y = 9$	$\frac{1}{2}$	$\frac{1}{2}$	$-\frac{2}{1} = -2$
6) $6x + 2y = 4$	$\frac{3}{1}$	$\frac{3}{1}$	$-\frac{1}{3}$
7) $4x - y = 8$	4	4	$-\frac{1}{4}$

Write the equation of a line parallel to the given line that goes through the given point.

8. $y = 8x + 3$ Containing $(2, 4)$

9. $2x + y = 3$ Containing $(3, 9)$

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Write the equation of a line that is perpendicular to the given line that goes through the given point.

10. $y = \frac{1}{2}x - 4$ Containing $(5, -4)$

11. $y = 3x - 1$ Containing $(6, 2)$

Determine if the lines are parallel, perpendicular, or neither. SHOW YOUR WORK.

12. $y = 4x + 7$ $-4x + y = -18$

13. $y = \frac{2}{3}x - 4$ $-3x - 2y = 4$

14. $3x - y = 9$ $y = \frac{1}{3}x + 12$

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December 12, 2019 Wednesday

What is the slope of a parallel line? What is the slope of a perpendicular line?

8. $y = 8x + 3$ $m = 8$

10. $y = \frac{-1}{2}x - 4$ $m = -\frac{1}{2}$

Choose 2 from 12-14. Determine if the lines are parallel, perpendicular, or neither. SHOW YOUR WORK.

12. $y = 4x + 7$ $-4x + y = -18$

13. $y = \frac{2}{3}x - 4$ $-3x - 2y = 4$

14. $3x - y = 9$ $y = \frac{1}{3}x + 12$

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Geometry Study Guide

Slope, Slope-Intercept Form, Parallel & Perpendicular Lines



Find the slope of the line through each pair of points.

1) $(1, 10), (3, 14)$ 2) $(-4, 15), (-6, 15)$

Find the slope of each line. $y = mx + b$

3) $y = 5x - 4$ $m = 5$

4) $y = \frac{1}{2}x + 2$

5)  6) 

7) $x - y = 0$ 8) $3x + y = 5$

Find the slope of a line parallel to each given line.

9) $x = -3$ 10) $y = -x + 2$



11) $3x - y = 5$ $y = mx + b$

$3x - y = 5$
 $-y = -3x + 5$
 $y = 3x - 5$

12) $4x + y = 0$

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Find a line parallel to the given line.

15)  14) 

Write the slope-intercept form of the equation of the line described.



15) through $(-2, -5)$, parallel to $y = \frac{5}{2}x - 4$ 16) through $(4, 0)$, parallel to $y = \frac{5}{2}x - 2$

Find the slope of a line perpendicular to each given line.

17) $y = \frac{3}{2}x + 2$ 18) $y = \frac{2}{3}x + 1$

19) $x + 5y = 10$ 20) $3x + 2y = 6$

Find a line perpendicular to the given line.

21)  22) 

Write the slope-intercept form of the equation of the line described.

23) through $(4, -2)$, perp. to $y = 4x - 2$ 24) through $(4, 1)$, perp. to $y = 2x - 4$

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$y = mx + b$
 Write the slope-intercept form of the equation of the line described.

15) through: $(-2, -5)$, parallel to $y = \frac{5}{2}x - 4$

$m = \frac{5}{2}$

$y = mx + b$
 $-5 = \frac{5}{2}(-2) + b$
 $-5 = -5 + b$
 $+5 \quad +5$
 $0 = b$
 $y = \frac{5}{2}x + b$
 $y = \frac{5}{2}x + 0$
 $y = \frac{5}{2}x$

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Write the slope-intercept form of the equation of the line described.

16) through: $(4, 0)$, parallel to $y = \frac{5}{4}x - 2$

$m = \frac{5}{4}$

$y = mx + b$
 $0 = \frac{5}{4}(4) + b$
 $0 = 5 + b$
 $-5 \quad -5$
 $-5 = b$
 $y = mx + b$
 $y = \frac{5}{4}x - 5$

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Unit 5 Study Guide

1. Which information is needed to show that a parallelogram is a rectangle?
 A. The diagonals bisect each other.
 B. The diagonals are congruent.
 C. The diagonals are congruent and perpendicular.
 D. The diagonals bisect each other and are perpendicular.

2. Using A-D from #1, which information is needed to prove a parallelogram?
 A. $\angle A = 90^\circ$
 B. $\angle B = 90^\circ$
 C. $\angle C = 90^\circ$
 D. $\angle D = 90^\circ$

3. Given the points $P(2, -1)$ and $Q(-9, -6)$, what are the coordinates of the point on the directed line segment PQ that partitions PQ into the ratio $\frac{2}{3}$?
 A. $(-\frac{10}{5}, -\frac{7}{5})$
 B. $(-\frac{12}{5}, -\frac{9}{5})$
 C. $(\frac{1}{5}, \frac{2}{5})$
 D. $(-\frac{1}{5}, -\frac{2}{5})$

4. An equation of a line a is $y = -\frac{1}{2}x - 2$. See graph.

What is the equation of the line that is perpendicular to line a shown on the graph and passes through point $(-4, 0)$?
 A. $y = -\frac{1}{2}x + 2$
 B. $y = -\frac{1}{2}x + 8$
 C. $y = 2x - 2$
 D. $y = 2x + 8$

5. Which point is on a circle with a center of $(3, -9)$ and a radius of 3?
 A. $(-4, 5)$
 B. $(-1, 6)$
 C. $(1, 6)$
 D. $(6, -5)$

6. Parallelogram $ABCD$ has vertices as shown.

Write out the two sets, AC & BD , of the full distance formula; set equal to each other that would be used to prove that the diagonals of $ABCD$ bisect each other. Then solve.

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Use the information provided to write the standard form of a circle.

7. Center: $(2\sqrt{3}, -5\sqrt{2})$, Radius = $\sqrt{13}$
 8. Center: $(4, -14)$ and the point $(6, 11)$ that lies on the circle.

Use the information provided to write the general conic form of a circle.

9. $(x + 10)^2 + (y - 7)^2 = 9$
 10. $(x - 14)^2 + (y + 14)^2 = 9$

Use the information provided to write the standard form of a circle. Then identify the center and radius length.

11. $x^2 + y^2 - 20x + 2y + 76 = 0$
 12. $2x^2 + 2y^2 + 28x + 24y + 21 = 0$

Find the center and the radius length to write the standard form of each circle.

13.

14.

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15. Prove or disprove that the points $A(6, 6)$, $B(8, -4)$ and $C(-10, 0)$ are the vertices of an isosceles triangle inscribed in the circle centered at the origin Q and passing through the point $P(3, \sqrt{3})$.

On a coordinate plane, a local television station is located at the origin and has a broadcast range of 50 miles.

16. Write an equation that represents the region covered by this television station.
 17. Can a person who lives 18 miles to the East and 35 miles North of the station watch this TV station?

You're a city planner, so you know that streets run north to south and avenues run east to west. Your friend tells you the corners of the street and 50th Avenue. Her sister Rebecca lives at the corner of 7th Street and 10th Avenue. If necessary, draw a graph to find the cross street that:

18. Is halfway between their homes.
 19. Is $\frac{2}{3}$ of the way from Madison to Rebecca's.

20. Separates their homes in a ratio of 3:1.
 21. Separates their homes in a ratio of $\frac{1}{2}$.

Determine if point A lies on a circle with center C and point P which is known to lie on the circle.

22. $A(5, 0)$, $C(0, 0)$, $P(3, 4)$
 23. $A(0, 4)$, $C(2, 1)$, $P(5, 3)$

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For each figure using, prove the type of quadrilateral, using distance and, or slope. Keep diagonals in mind.

24. $ABCD$: $A(1, 2)$, $B(2, 5)$, $C(4, 3)$, $D(5, 6)$
 25. $EFGH$: $E(4, 1)$, $F(-2, 3)$, $G(2, -5)$, $H(-4, -3)$

Write the equation of the lines below in slope-intercept form: $y = mx + b$.

26. Through $(-4, 5)$ and parallel to $y = -\frac{3}{2}x - 5$.
 27. Through $(4, 1)$ and perpendicular to $y = -2x - 2$

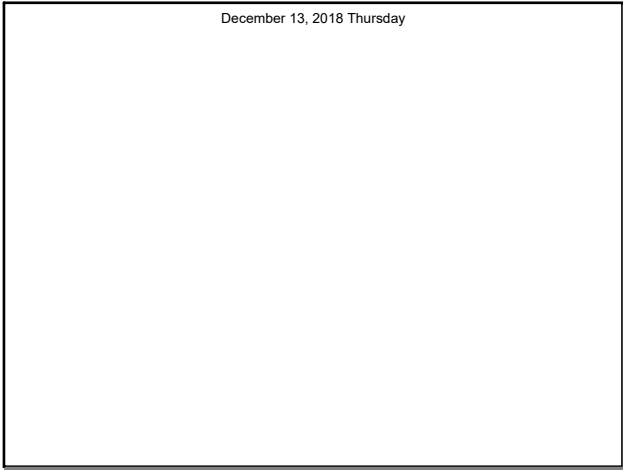
Find the area and perimeter of the following triangle. Simplify terms required. Rounder: Draw altitude to find height.

28. Area = _____

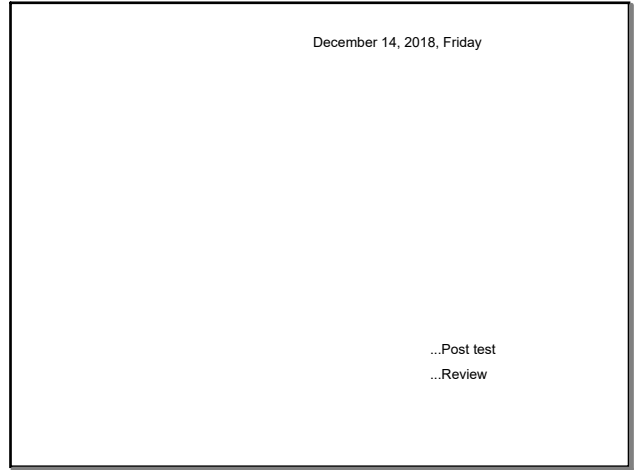
29. Perimeter = _____

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