Midterm Review

Line $\overline{AB}$ passes through the points $A(4, -3)$ and $B(6, 5)$.

a) **What is the rate of change of line $\overline{AB}$?**

b) **What is the y-intercept of line $\overline{AB}$?**

c) **What is the equation of line $\overline{AB}$?**

d) **What is the equation of line L, parallel to line $\overline{AB}$, and passing through (2, 3)?**

e) **What is the equation of line L, perpendicular to line $\overline{AB}$, and passing through (0, 5)?**

a)	
b)	
c)	
d)	
e)	

Determine the *y*-intercept in the equation: $5x - 3y + 15 = 0.$

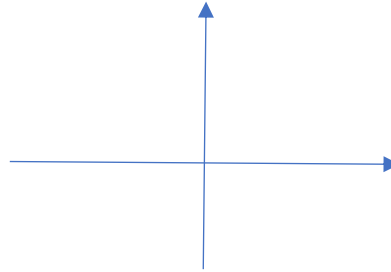**Determine the *x*-intercept in the equation:** $5x - 3y + 15 = 0.$

Midterm Review

1.) Line L has a negative x-intercept, as well as a negative slope. *(hint: make a sketch)*

Will the y-intercept be positive or negative? _____

2.) A line has a slope of 4 and passes through the point $(3, -5)$. Calculate the x-intercept.
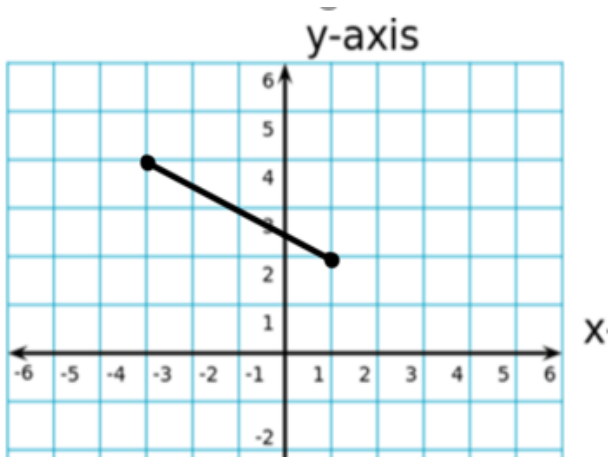
Midterm Review

Line segment $\overline{PQ}$ is represented in the Cartesian plane below.

y-axis

a) **Determine the slope $\overline{PQ}$.**
   Answer: _____

X

b) **Determine the distance of $\overline{PQ}$.**   **Answer:** _____

c) **Determine the midpoint of $\overline{PQ}$.**   **Answer:** _____

Midterm Review

Convert the following equations into functional form and state the slope.

a) $-5x + 8y - 40 = 0$

Functional form:_____
Slope: _____

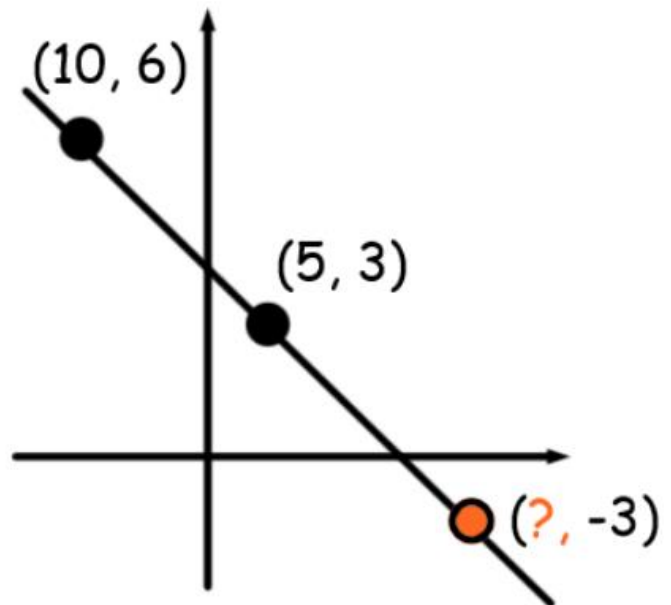**b)** $12x - 120 = 4y$

Functional form:_____
Slope: _____

Midterm Review

Find the missing x-coordinate.

(10, 6)

(5, 3)

(?, -3)

Midterm Review

Find the **missing** y-**coordinate**.
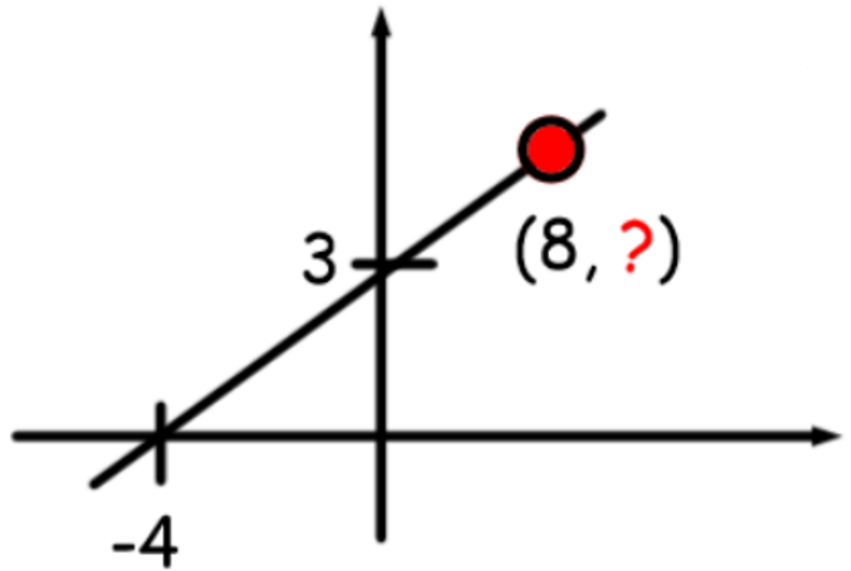
Midterm Review

Given the following lines:

Line 1: $2x - y - 1 = 0$ **Line 3:** $x - 2y + 12 = 0$

Line 2: $2x - y - 5 = 0$ **Line 4:** $-x - 2y - 6 = 0$

a)   Write each line in functional form.

Answers:	
Line 1	
Line 2	
Line 3	
Line 4	

b) Line 1 is perpendicular to which other line? Answer: _____

c) Which 2 lines are parallel? Answer: _____

Write the equation of a line that is perpendicular to $2x = y - 5$**, and passes through the point** $(-4, 4)$**.**

Determine the point of intersection for the system of equations:

$$y = 4x - 8$$

$$2x + 3y = 4$$

FIND COORDINATE A.
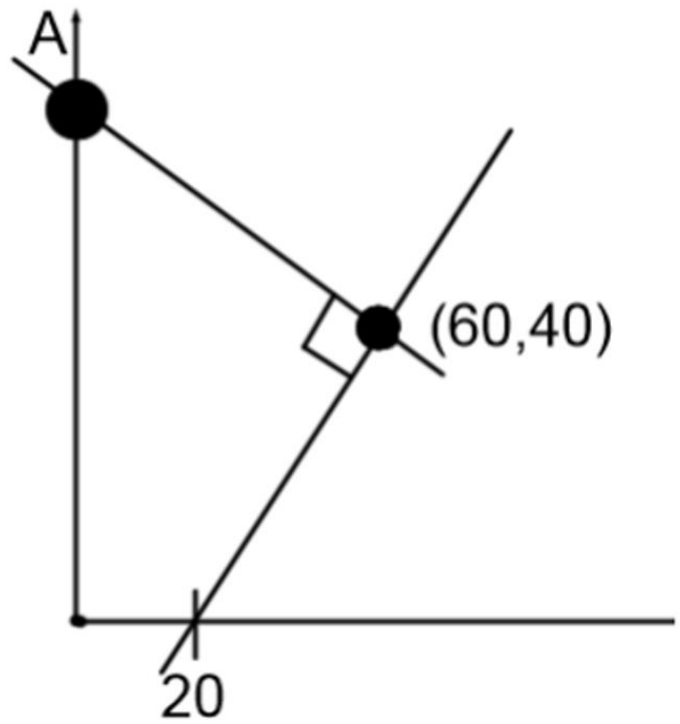
Midterm Review

DETERMINE COORDINATE E.

$$y = -5x - 40$$

C

E

D

(-5,-15)
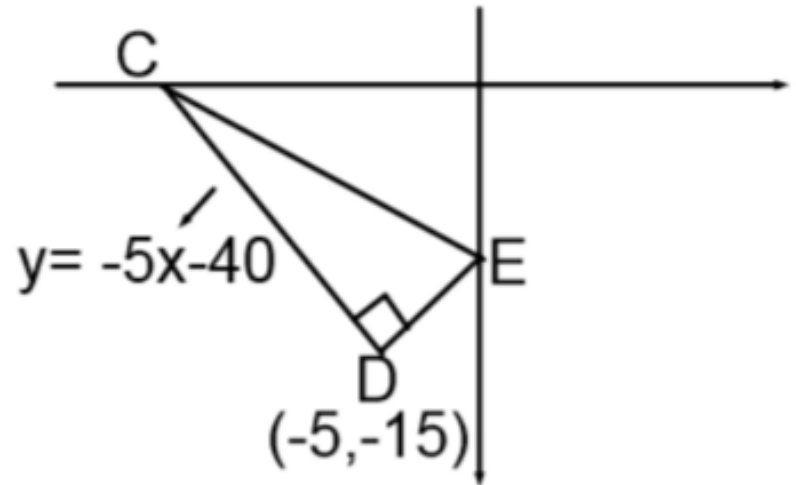
Two friends are saving to travel to Australia for the summer. Jeff deposits $1050 in a savings account that accumulates an interest of 0.03% per month. Suzie deposits $1200 in a saving account that accumulates an interest rate of 0.02% per month. Which friend will have more money to travel to Australia in 2 years?

Midterm Review

On the same day in January 2010, Daniel bought a truck and Jack bought a car. Since then the value of each vehicle has decreased annually with respect to its previous year's value. The following function describes how the value of Daniel's truck has decreased

$$f(x) = 31000 \, (0.89)^x$$

where x = years since purchase

$f(x)$ = value of truck

Jack paid $25000 for his car in January 2010 and his car has been depreciating at a rate of 12% annually.

When Daniel's truck is worth $15406.42, how much will Jack's car be worth?

Norman was driving to his chalet for the weekend. However, when he was located at coordinates (26, -10), his gas light turned on indicating that he could only travel another 50 km before his car would run out of gas. His Global Positioning System (GPS) gave the coordinates of the closest gas station at (-9, 2). Will he be able to make it to the gas station? All distances are in kilometres.

A circle has its centre at point O (-1, 3). The point A (3, 2) is on its circumference. Calculate the diameter of the circle.

Determine the coordinates of the mid-point of the line segment AB where A = (4, -1) and B = (0, -5).

Given the end-points $A = (-3, 1)$ and $B = (6, 4)$ of line segment AB, what are the coordinates of the point P that divides segment AB in the ratio $1 : 2$ from point A?

If the point **P** is located $\dfrac{2}{5}$ of the way along segment

AB from point **B**, what are the coordinates of point **P** if
A = (-1, 7) and **B** = (-6, 2) are the end-points of segment
AB?

Find the equation of the line that is perpendicular to the line $y = \frac{2}{7}x - 5$ and passing through the point $A(3, 2)$.

Consider two lines on the Cartesian Plane.

$l_1: 8y - 4x = 32$

$l_2: 2y - 14 = x$

What is the relationship between l_1 and l_2?

a. l_1 and l_2 are intersecting lines

b. l_1 and l_2 are parallel and distinct lines

c. l_1 and l_2 are parallel and coincident lines

d. l_1 and l_2 are perpendicular lines

Show work here.

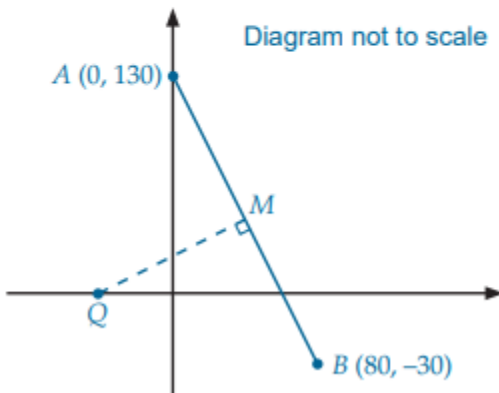**Midterm Review**

Mary has moved into a new development underway in her neighborhood. A new section of road $\overline{MQ}$ is to be built as shown below. If point M is the midpoint of segment $\overline{AB}$ and segment $\overline{MQ}$ is perpendicular to segment AB, find the length of the new road $\overline{MQ}$.

Diagram not to scale

A (0, 130)

M

Q

B (80, –30)

Midterm Review

Sara and Dave are planning to meet in the Bahamas for spring break. Sara will take a direct flight from Toronto and Dave will fly from Montreal. The layout is graphed on the Cartesian Plane scaled in kilometres.

When Sara has traveled 2/3 of the distance to the Bahamas, she decides to send Dave a message. At this point in time, Dave's position divides the path between Montreal and the Bahamas in a ratio of 3:2. How far apart are Dave and Sara when the message is sent?

Dave (180, 200)

Sara (50, 100)

?

Bahamas (170, 25)
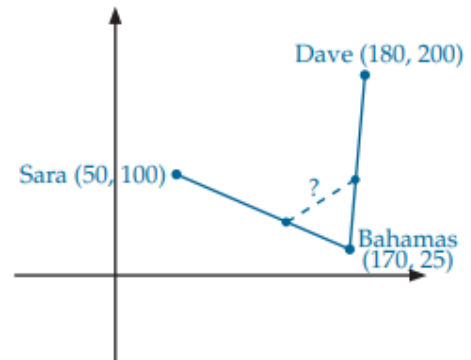
Midterm Review

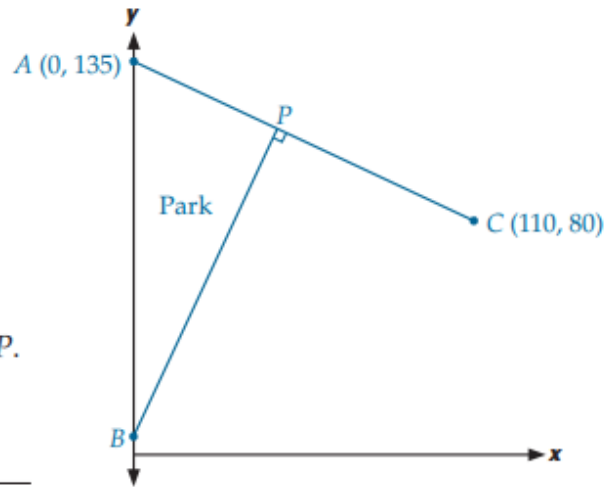A local municipality would like to designate an area for a park. The situation has been scaled in metres on the following Cartesian Plane.

- Point P is located along segment $\overline{AC}$ in a ratio of 4:7.

- $\overline{AC}$ is perpendicular to $\overline{PB}$.

- The area designated for the park is $\triangle ABP$.

What is the area of the park?

_____
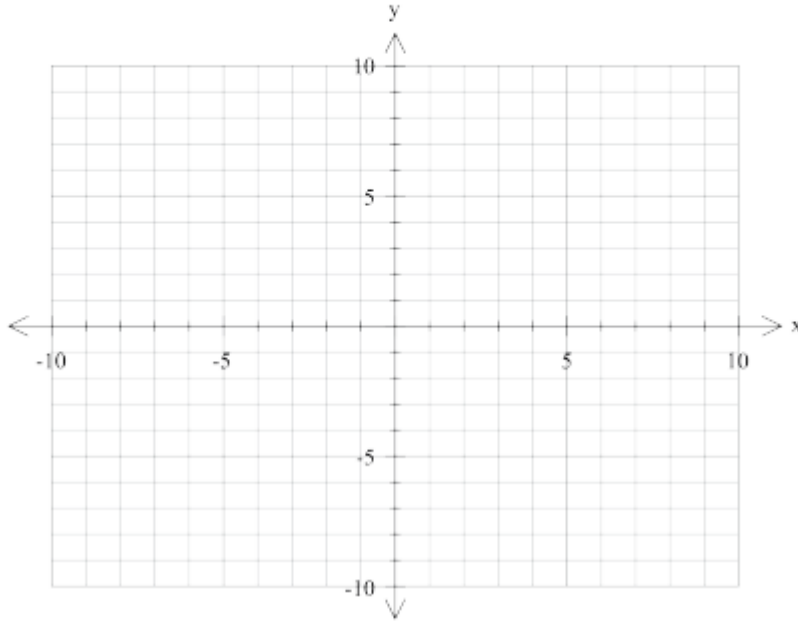

A (0, 135)

P

Park

C (110, 80)

B

Midterm Review

Graph each of the following linear functions by creating a table of values and determining the coordinates of two points.

$3x + 4y = 12$

x	y

$y = \dfrac{1}{3}x - 5$

x	y
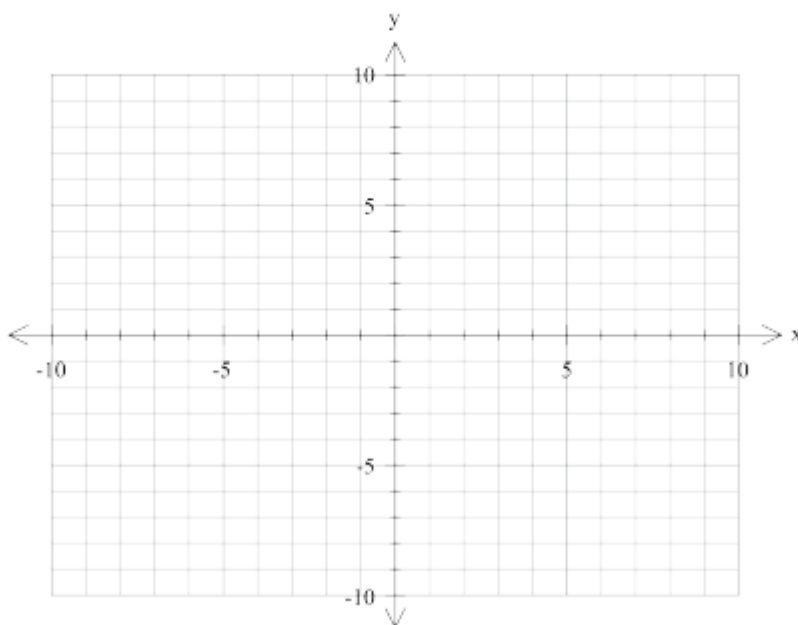
Jeff, Andy and Joe like to play darts. The following table shows the points received already in the yellow section and the amount of darts that landed in the other coloured sections of the dart board.

player	colour			Total points
	Black section	**Red section**	**Yellow section**	
Jeff	3 darts	7 darts	10 points	175
Andy	5 darts	8 darts	5 points	225
Joe	4 darts	6 darts	15 points	?

How many total points did Joe score?

Midterm Review

A system of equations is graphed on the Cartesian plane below. Solve this system of equations.
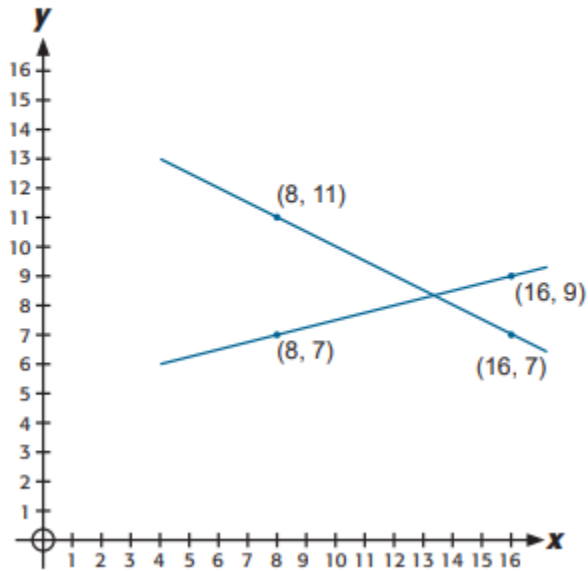
Midterm Review

Solve the equation by isolating the variable.

1.) $5x + 7 = 22$

2.) $-3x - 4 = 11$

3.) $\dfrac{x}{4} + 7 = 12$

Midterm Review

Solve the equation by isolating the variable.

1.) $0.4x - 3 = 7$

2.) $8 - 2x = 12$

3.) $7 - x = 14$

Midterm Review

Solve the equation by isolating the variable.

1.) $\dfrac{2x-4}{6} = 3$

2.) $5m - 8 = 7m - 2$

Midterm Review

Solve the equation by isolating the variable.

1.) $5k = 7 - 11k - 13$

2.) $5 + 8y - 14 = y + 5$

Midterm Review

The grade 11 girls are trying to raise money for their graduation dance. It has been a tradition to sell handmade bracelets and necklaces to raise funds. Two years ago the girls sold 23 bracelets and 19 necklaces for a profit of $179.25. Last year the girls sold 27 bracelets and 18 necklaces for a profit of $186.75. This year the girls have made 30 bracelets and 25 necklaces. How much money will the raise if the sell all their jewelry?

Midterm Review

Graph

$y = -x + 5$

My Calculations												

Graph.

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

My Calculations											
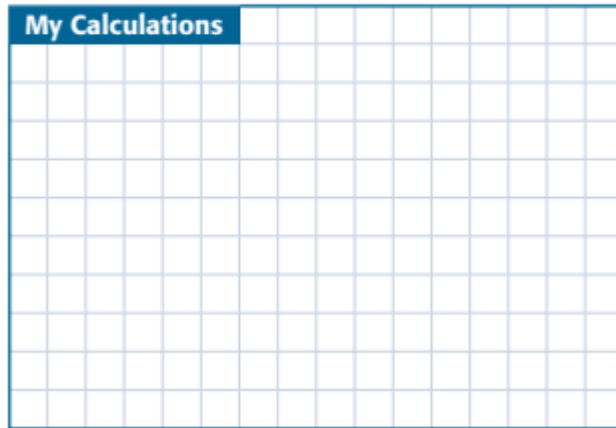
Midterm Review

The equation of line ℓ is $6x - 3y + 2 = 0$. Which of the equations given below is perpendicular to line ℓ?

a) $y = \dfrac{1}{2}x$

b) $y = -\dfrac{1}{2}x$

c) $y = 2x$

d) $y = -2x$

Midterm Review

Last weekend, Colin, Ankur and Erin took their families out to the same restaurant. The restaurant had a set menu that night and there were two options for dinner. Guests could either order a Pasta meal or a Surf & Turf meal.

After dinner the waiter brought the bill to each of the tables, but the waiter forgot to mark in the total for Erin's table (the totals include the taxes).

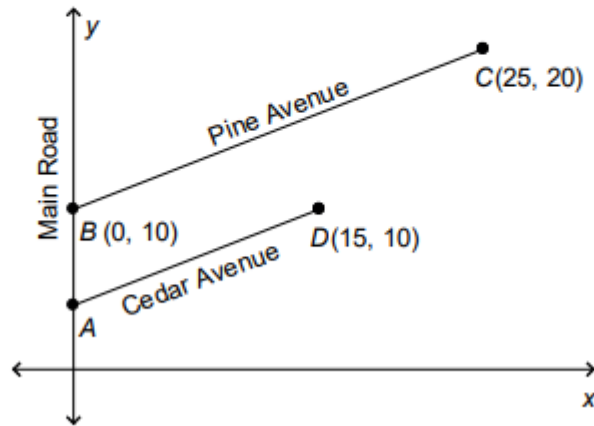| Colin's Table	Ankur's Table	Erin's Table
4 Seafood Meals	5 Seafood Meals	6 Seafood Meals
3 Surf & Turf Meals	4 Surf & Turf Meals	6 Surf & Turf Meals
Total:$111	Total: $143	Total: _____

Midterm Review

In the diagram show below, Pine Avenue ($\overline{BC}$) is parallel to Cedar Avenue ($\overline{AD}$). Pine Avenue meets Main Road at point B and Cedar Avenue meets Main Road at point A. What is the length of Cedar Avenue to the nearest tenth of a unit?

Midterm Review

Charles wants to buy a cell phone. The Norris Cellular Phone Company charges $35 per month plus $0.05 per minute. The Benwell Cellular Phone Company charges $25 per month and $0.10 per minute.

When Charles looked at the number of minutes he used last month on his old cell phone, he realized that he would have wound up paying the same amount with each of the two companies.

How many minutes per month did Charles use his phone last year?

Midterm Review

Five friends each have a cottage as shown on the map below. The map, that is scaled in kilometres, shows the cottage's locations (the ordered pairs indicate the coordinates of each cottage) and the roads connecting them. Peter's cottage is twice as far from Eric's cottage as it is from Don's cottage. Jon's cottage is exactly halfway between Eric's cottage and Wayne's cottage.

If Peter and Jon connect their cottages with a straight road, how long would that road be in kilometres?

Don (2, 19)

Peter

Wayne (24, 5)

Jon

Eric (8, 1)
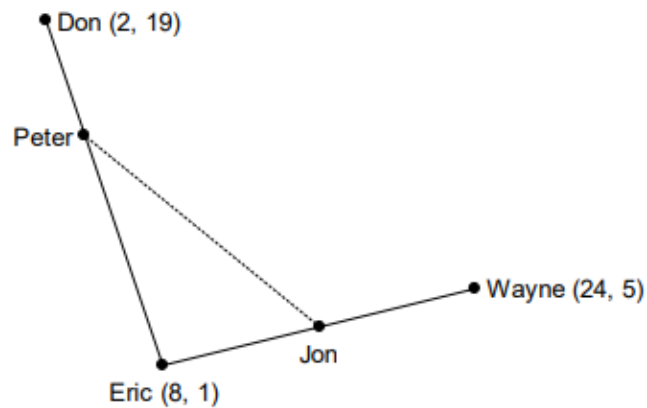
Midterm Review

The equations of two linear functions are shown below.

$$y_1 = 3x$$
$$y_2 = -3x$$

Which one of the following statements is true?

a) The two lines are parallel and never intersect.

b) The two lines intersect, but are not perpendicular.

c) The two lines are perpendicular.

d) These two equations are parallel and coincident.

David receives a base salary of $350 and earns $15 for every scooter he sells. Sheila works for the same company and her salary is represented by the following equation:

x: total scooters sold

$$y_s = 250 + 25x$$

y_s: total salary for Sheila

After how many sales will their total salaries be the same?

a) They both need to sell 500 scooters.

b) David's total salary will always be more than Sheila's.

c) They both need to sell 10 scooters.

d) Sheila's total salary will always be more than David's.

Macrohard Software and Computers Inc. has been manufacturing processors since 1982. They estimate that the speed of their top processor has increased by 15% every year. On January 1, 1982, the speed of their top processor was 60 MHz. This situation is represented by the rule given below:

$$F(x) = 60(1.15)^x$$

x: # of years since January 1, 1982

$F(x)$: Speed of the top processor

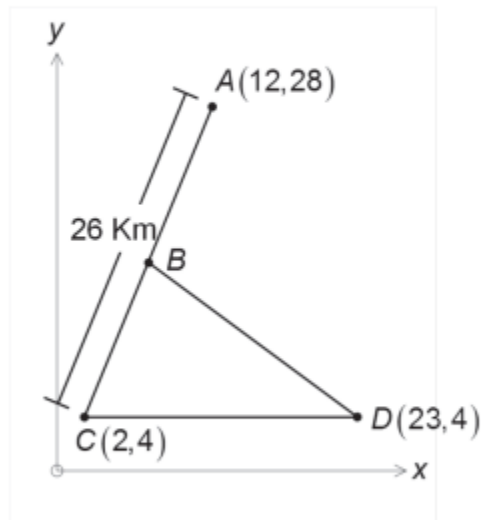What will the speed of the company's top processor be on January 1, 2012?

Midterm Review

In the coordinate plane below (scale is in kilometres), line segments AC, CD and BD represent horseback riding trails. Each letter represents a barn. Barn B is located halfway between barn A and barn C. The trail connecting barn A to barn C is 26 Km long.

If Melissa set off on her horse from barn C, rode to barn D, then to barn B, and then back to barn C, how far did she ride?

Midterm Review

At Winter Carnival last year, the students at Westwood Senior High School bought hats and scarves and made a profit reselling them. The following table shows the profit earned by the students in grade 10 and grade 11.

	# of hats sold	# of scarves sold	Profit
Grade 10	60	50	$390
Grade 11	80	40	$440

What will the profit be for the grade 9 students if they sell 75 hats and 55 scarves?

Midterm Review

Determine the slope of a line whose

- *x*-intercept is -2 and *y*-intercept is -4.

_____

Determine the equation of a line whose

- *x*-intercept is 4 and *y*-intercept is 2.

_____

Determine the equation of a line whose

- *x*-intercept is 8 and *y*-intercept is 10.
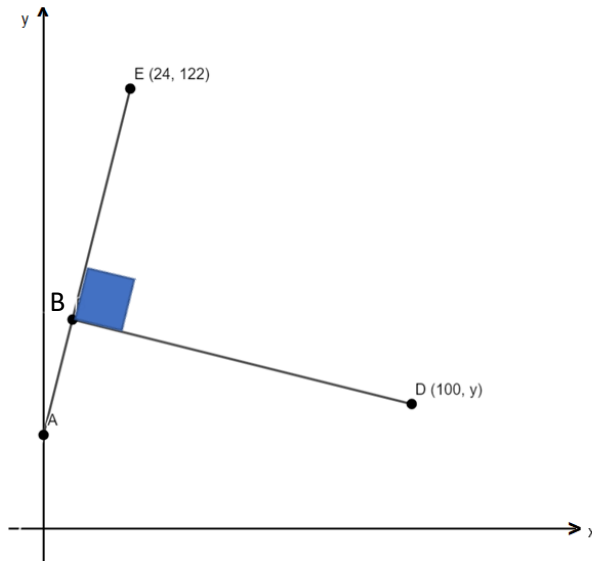
_____

Midterm Review

Below are two lines on the Cartesian plane

- . The equation for line AE is $y = 4x + 26$

- The coordinates for point E is (24, 122).

- Point A is located on the *y*-axis.

- Point B is located $\frac{1}{3}$ of the way along line AE.

- The *x*-coordinate for point D is 100.

What is the length of line segment BD ?