Skill Builder

1 The Distance Between Two Points

EVALUATED

1 Calculate the distance between the following two points.
$A(3,7)$ $B(6,11)$

My Calculations

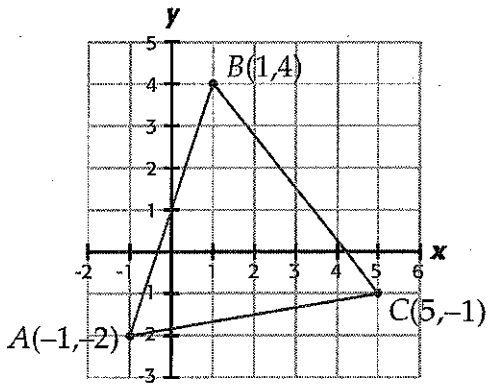
2 Calculate the distance between the following two points:
$A(-7,3)$ $B(2,-1)$

My Calculations

3 Calculate the distance between the following two points.
$A(-6,2)$ $B(-3,2)$

My Calculations

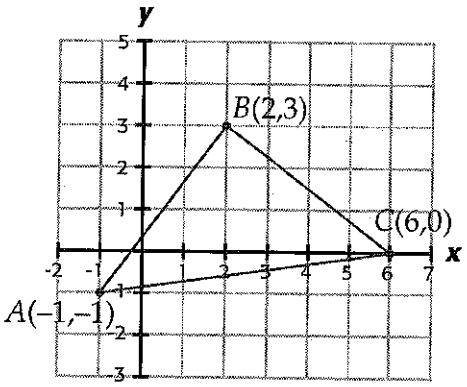
4 Find the perimeter of the triangle on the graph below.



My Calculations

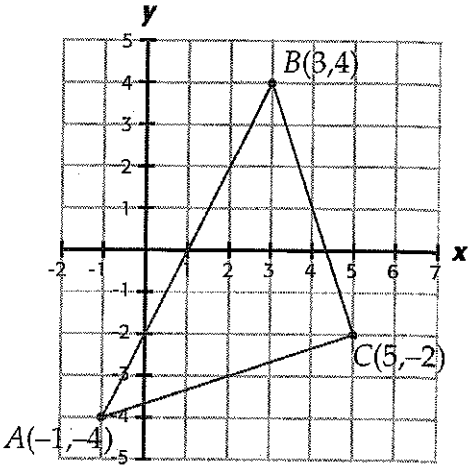
Skill Builder

5 Show that the triangle on the graph below is an isosceles triangle.



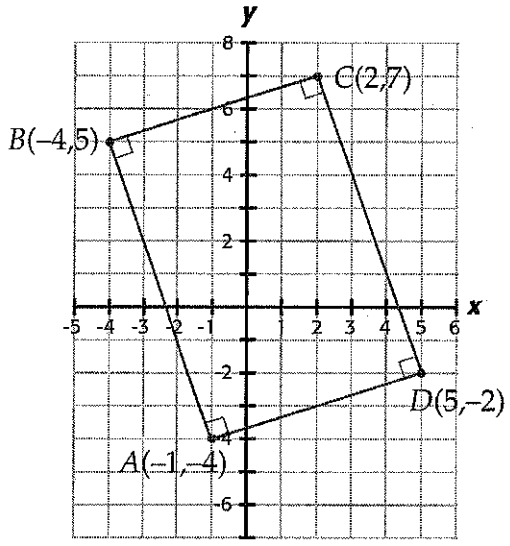
My Calculations

6 Show that the triangle on the graph below is a right angled triangle.



My Calculations

7 Find the area of the rectangle on the graph below.



My Calculations

8 The endpoints of the diameter of a circle are at the points $A(2,5)$ and $B(8,13)$. What is the length of the radius?

My Calculations

9 The endpoints of the diameter of a circle are at the points $A(-3,2)$ and $B(1,5)$. What is the circumference of the circle?

My Calculations

10 The centre of a circle is at the point $A(7,-3)$. Point B is on the edge of this circle at $B(2,9)$. What is the area of this circle?

My Calculations

Skill Builder

2 The Mid-Point of a Line Segment EVALUATED

1 Determine the coordinates of the mid-point of the line segment AB where $A = (4, 7)$ and $B = (8, 1)$.

My Calculations

2 Determine the coordinates of the mid-point of the line segment AB where $A = (5, 2)$ and $B = (3, 10)$.

My Calculations

3 Determine the coordinates of the mid-point of the line segment AB where $A = (-3, 2)$ and $B = (5, -4)$.

My Calculations

4 Determine the coordinates of the mid-point of the line segment AB where $A = (-5, -4)$ and $B = (-1, -10)$.

My Calculations

5 If point $M(1, 3)$ is the mid-point of segment AB, determine the coordinates of point B if the coordinates of point A are $(5, -1)$.

My Calculations

6 If point $M(-2, -3)$ is the mid-point of segment AB, determine the coordinates of point A if the coordinates of point B are $(-8, -5)$.

My Calculations

7 If point $M\left(\frac{5}{2}, -\frac{3}{2}\right)$ is the mid-point of segment AB, determine the coordinates of point A if the coordinates of point B are $(0, 0)$.

My Calculations

8 If point $M\left(-\frac{3}{2}, \frac{1}{2}\right)$ is the mid-point of segment AB, determine the coordinates of point B if the coordinates of point A are $(-4, 5)$.

My Calculations

9 A circle is drawn on a Cartesian Plane. The end-points of a diameter of this circle are located at point $A = (-2, -1)$ and point $B = (8, 5)$. What are the coordinates of the centre of this circle?

My Calculations

10 The locations of Dan's, Eric's, and Peter's houses have been plotted on a Cartesian Plane, and a straight line can be drawn through the three locations. What are the coordinates of Eric's house if Dan's house $D(-1, 1)$ is the halfway point between Eric's and Peter's house $P(3, 5)$?

My Calculations

Skill Builder

3 The Division Point of a Line Segment EVALUATED

1 Given the end-points $A = (5, -2)$ and $B = (0, 3)$ of line segment AB, what are the coordinates of the point P that divides segment AB in the ratio 3 : 2 from point B?

My Calculations

2 Given the end-points $A = (2, 1)$ and $B = (6, 9)$ of line segment AB, what are the coordinates of the point P that divides segment AB in the ratio 3 : 1 from point A?

My Calculations

3 If the point P is located $\frac{2}{3}$ of the way along segment AB from point A, what are the coordinates of point P if $A = (-3, 4)$ and $B = (6, 1)$ are the end-points of segment AB?

My Calculations

4 If the point P is located $\frac{1}{4}$ of the way along segment AB from point B, what are the coordinates of point P if $A = (5, -1)$ and $B = (-3, 7)$ are the end-points of segment AB?

My Calculations

5 A point $P = (7, 1)$ divides segment AB in a ratio of 2 : 1 from end-point $A = (5, 3)$. What are the coordinates of point B?

My Calculations

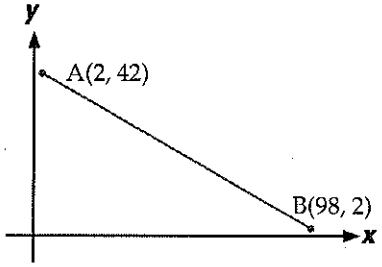
6 A point $P = (4, 2)$ divides segment AB in a ratio of 1 : 3 from end-point $B = (6, 3)$. What are the coordinates of point A?

My Calculations

7 A point $P = (3, 5)$ is $\frac{2}{3}$ of the way along segment AB from point B. If the coordinates of point B are $B = (6, 7)$, what are the coordinates of point A?

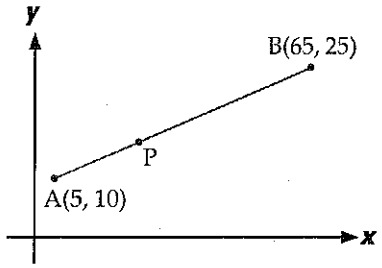
My Calculations

8 In what ratio does $P = (62, 17)$ divide segment AB in the Cartesian Coordinate Plane below from point B?



My Calculations

9 In the Cartesian Plane below, point P is one of the points along line segment AB. The distance between points P and B is twice the distance between points A and P. What are the coordinates of point P?



My Calculations

10 By using a ratio of 1 : 1, derive the formula for the mid-point of a line segment AB by using the formula for the Division Point of a line segment. Remember that the formula to calculate the coordinates of the mid-point of a line segment AB is:

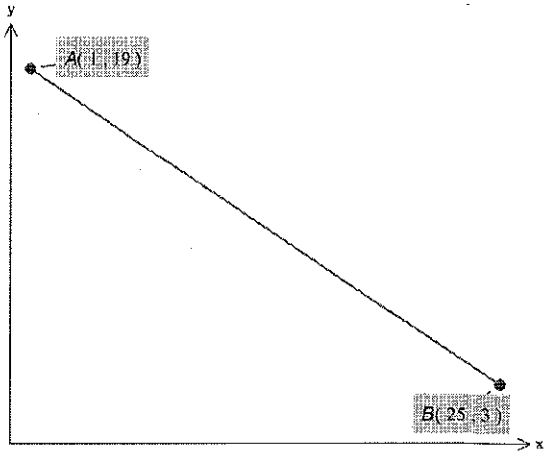
$$x_m = \frac{x_1 + x_2}{2}, \; y_m = \frac{y_1 + y_2}{2}$$

where (x_m, y_m) are the coordinates of the mid-point.

My Calculations

The Division Point of a Line Segment

1. Alex and Benjamin are sitting at home and talking on the phone with each other. The location of each of their houses is indicated on the graph provided (scaled in kilometres). During their phone call they decide to meet up. Over the next thirty minutes, Alex runs one quarter of the way to Benjamin's house and Benjamin rides his bike five eighths of the way to Alex's house.



What are their locations now and how far apart are they?

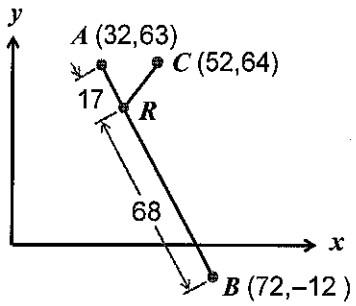
Show all work:

6 Analytic Geometry - Putting it all Together

EVALUATED

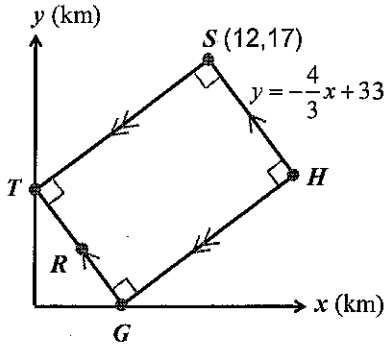
Skill Builder

1 Find the distance from point C to point R in the graph.



My Calculations

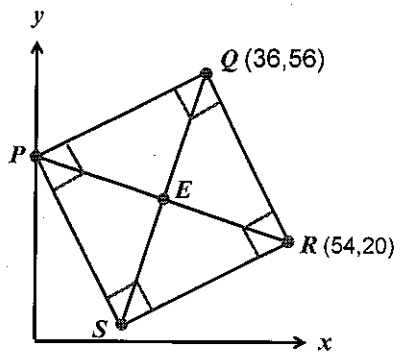
2 Serena drives a delivery truck as a summer job to make money for her college expenses. Her route has been superimposed on the Cartesian plane. She starts from the warehouse at point S and travels to the office tower at point T. Halfway from the office tower to the grocery store (at point G) she stops for lunch at point R. How far has she driven when she stops for lunch?



My Calculations

Skill Builder

3 If quadrilateral $PQRS$ is a square, what are the coordinates of point E?

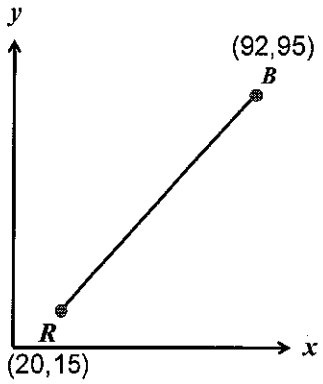


My Calculations

4 Two perpendicular lines intersect (meet) on the x-axis. If the first line is defined by the equation $y = \frac{1}{3}x - 2$, what is the equation of the other line?

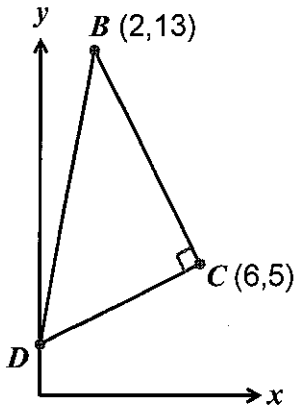
My Calculations

5 Rachel and Brad are shown standing a certain distance apart from each other. Rachel walks from R toward B and stops at a point that divides RB in a ratio of 3:5. Brad walks one quarter of the distance from point B to point R. How far apart are Rachel and Brad when they stop walking?



My Calculations

6 If point D in the triangle BCD is located on the y-axis, what is the length of BD?



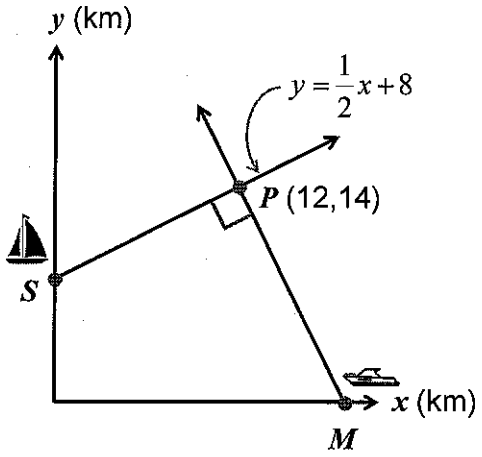
My Calculations

Skill Builder

7 Two boats head out on straight paths. A sailboat starts at point S, a motorboat starts at point M and they both pass through the point P.

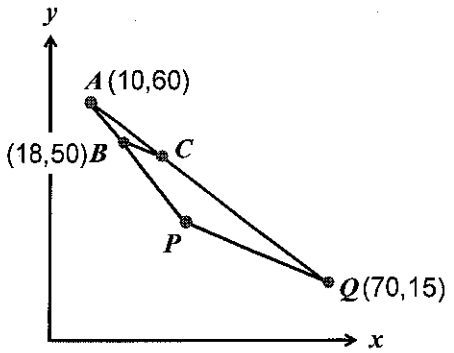
Approximately how far apart were they when they started their trips (the distance between points S and M)?

Round the answer you calculated to the nearest km.



My Calculations

8 In the graph, point B is $\frac{1}{3}$ of the way from point A to point P. What is the length of line PQ?

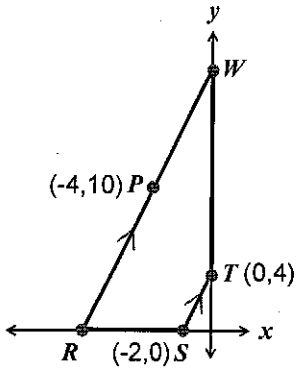


My Calculations

9 A road network in rural Manitoba has been superimposed onto the Cartesian plane. The road that passes through points S and T is parallel to the road that passes through points W, P and R.

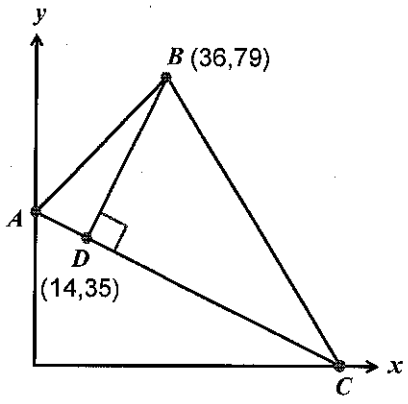
William (W), Pedro (P), Rachelle (R), Satchel (S) and Travis (T) all own farms where the points are indicated on the graph.

What are the coordinates of Rachelle's farm (point R)?



My Calculations

10 What is the area of ΔABC?



My Calculations