

Geometry

Chapter 1

Section 1-6 and 1-7

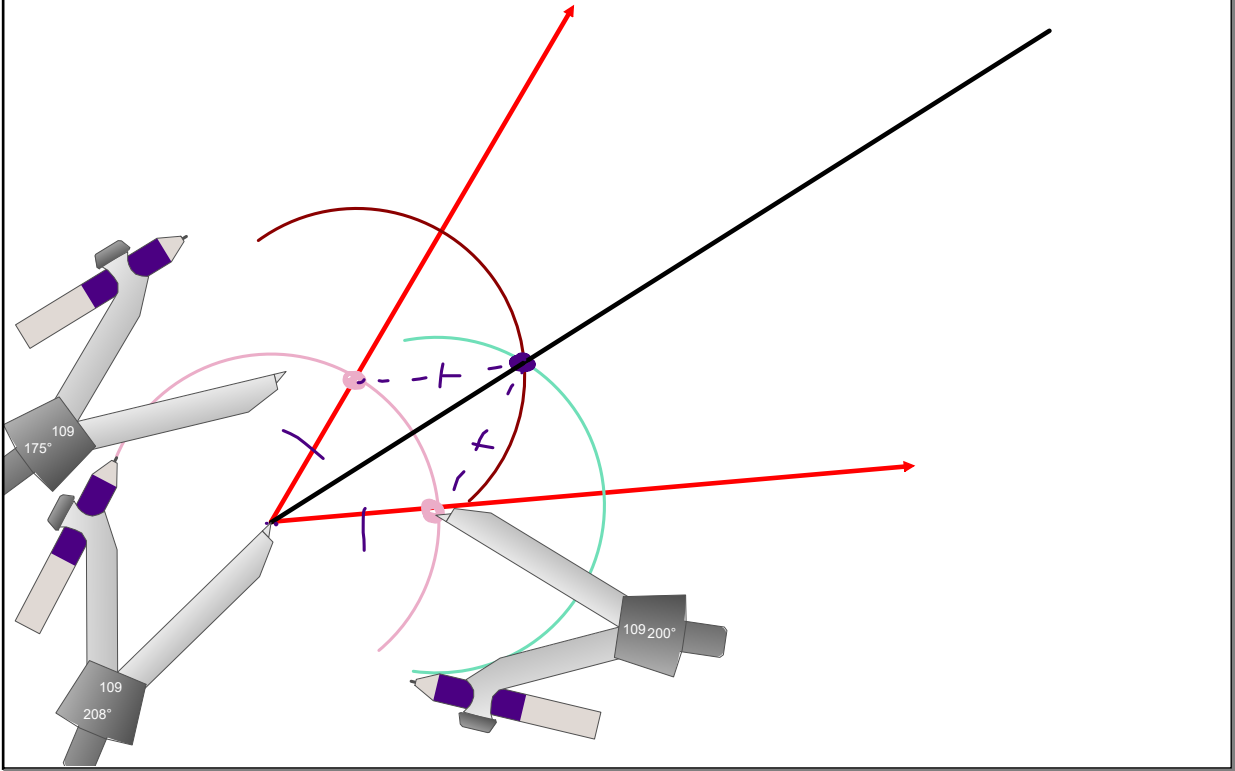
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Concepts

- Perpendicular Lines - Two lines that intersect to form right angles (\perp) Ex: $\overline{AB} \perp \overleftrightarrow{CD}$
- Perpendicular Bisector - Line, ray, or segment that is perpendicular to a segment at its midpoint

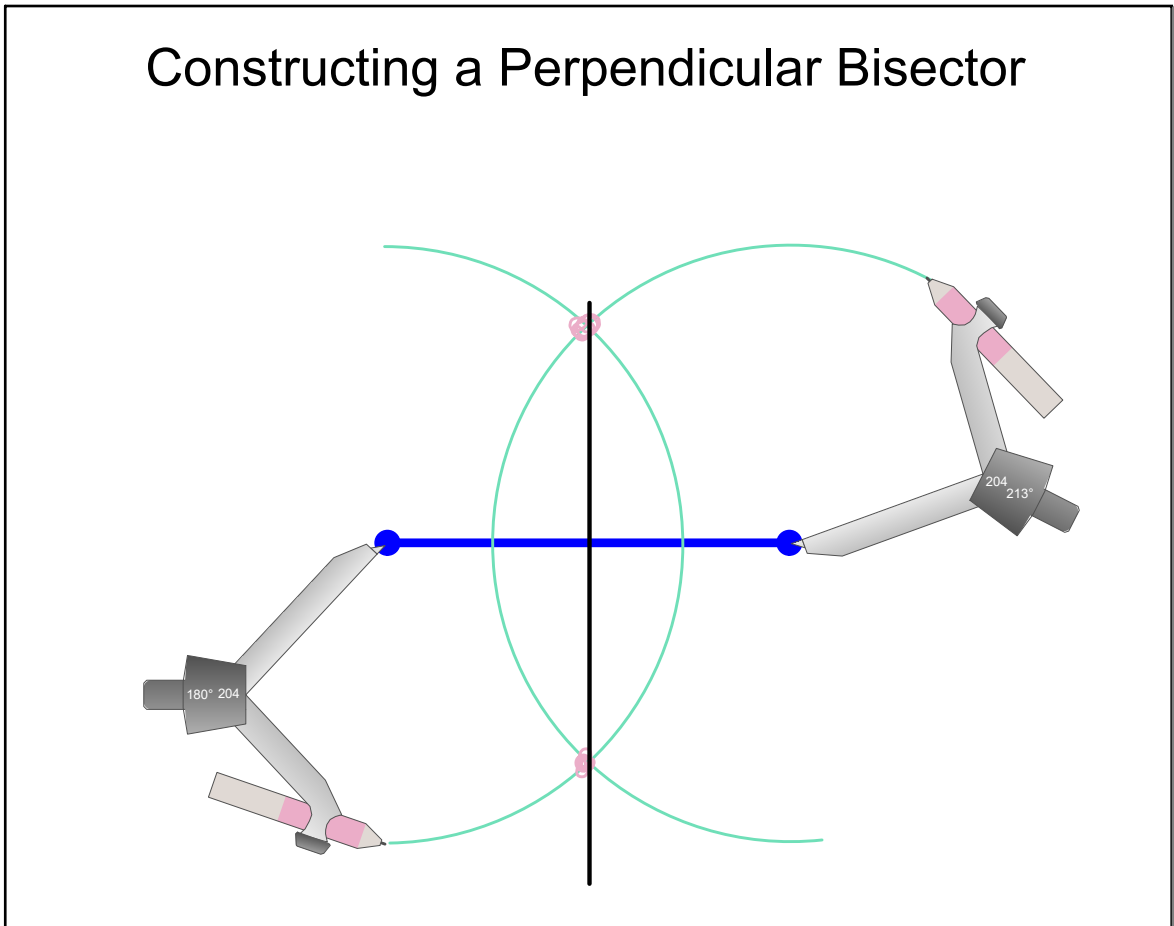
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Constructing a Angle Bisector



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Constructing a Perpendicular Bisector



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Averages

An average of a set of values is the sum of the values divided by the number of values.

Square Roots

For two real numbers a and b , if $a = \overbrace{b \cdot b}^{b^2}$ then b is the square root of $\underline{\underline{a}}$.

$$a = b^2$$

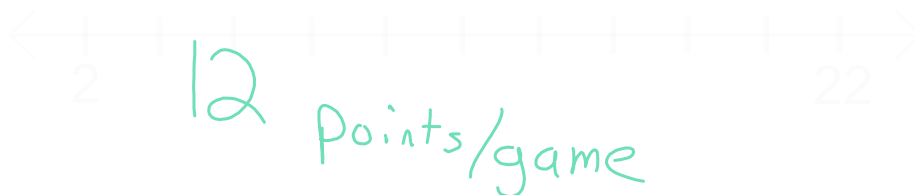
$$\sqrt{a} = b$$

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The number of points a basketball player scored in the last five games is given below. Find the player's average points per game.

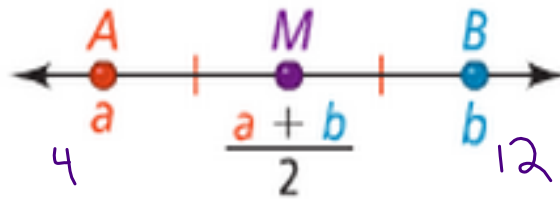
13, 10, 4, 11, 22

$$\frac{13 + 10 + 4 + 11 + 22}{5} = \frac{60}{5}$$



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Midpoint on a Number Line

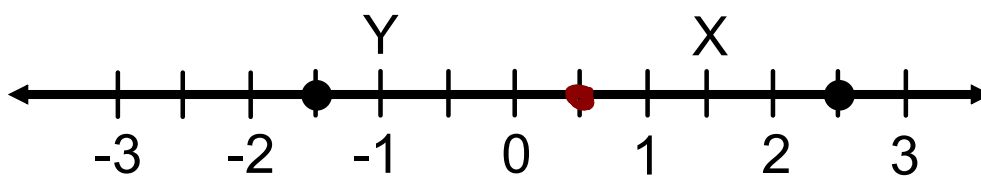


$$\frac{4+12}{2} = 8$$

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Midpoint on a Number Line

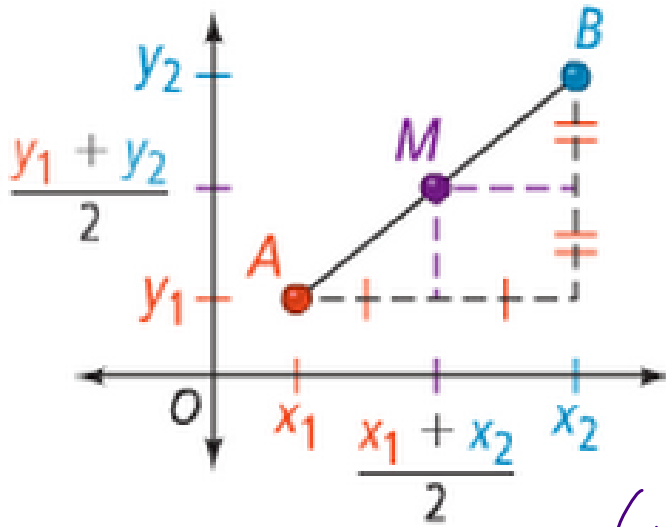
Find the midpoint between points X and Y



$$\frac{-1.5+2.5}{2} = \frac{1}{2}$$

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Midpoint on a Cartesian Graph



$$(x_m, y_m) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

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Find the midpoint of the segment drawn between the coordinates $(2, 5)$ and $(-8, 14)$

$$(x_m, y_m) = \left(\frac{2 + (-8)}{2}, \frac{5 + 14}{2} \right)$$

$$= \left(-3, \frac{19}{2} \right) \quad \leftarrow \text{OR } 9.5 \text{ or } 9\frac{1}{2}$$

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Point B is the midpoint of AC. Points A and B have coordinates $(-7, 3)$ and $(4, -1)$. Find the coordinates for point C.

$$(4, -1) = \left(\frac{-7 + x_2}{2}, \frac{3 + y_2}{2} \right)$$

$$2 \cdot 4 = \frac{-7 + x_2}{2}$$

$$2 \cdot -1 = \frac{3 + y_2}{2}$$

$$8 = -7 + x_2$$

$$-2 = 3 + y_2$$

$$+7 \quad +7$$

$$-3 \quad -3$$

$$15 = x_2$$

$$-5 = y_2$$

$$C: (15, -5)$$

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Distance Formula

The distance between two points (x_1, y_1) and (x_2, y_2) is:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Find the distance between $(4, 14)$ and $(-1, 2)$.

Write the exact answer and then round to two decimals if necessary

$$d = \sqrt{(-1 - 4)^2 + (2 - 14)^2}$$

$$d = \sqrt{(-5)^2 + (-12)^2}$$

$$d = \sqrt{25 + 144}$$

$$d = \sqrt{169}$$

$$d = 13$$

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Distance Formula

The distance between two points (x_1, y_1) and (x_2, y_2) is:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Find the distance between (2, 1) and (5, 4).

Write the exact answer and an estimate rounded to two decimals

$$d = \sqrt{(5-2)^2 + (4-1)^2}$$

$$d = \sqrt{(3)^2 + (3)^2}$$

$$d = \sqrt{9 + 9}$$

$$d = \sqrt{18}$$

$$d = \sqrt{\underbrace{9}_{3^2}} \sqrt{2}$$

$$d = 3\sqrt{2}$$

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In-class work

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Homework

Pages 54-55

#8-26 even, 46, 47, 58 (on #58 part a only)

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