

1.5: Segment + Angle Bisectors

Objective: Bisect a segment, Bisect an angle

Warm up: Activity on pg 33, what do you notice about the segments / angles

Vocab

Midpoint: the point that divides a segment into two congruent parts

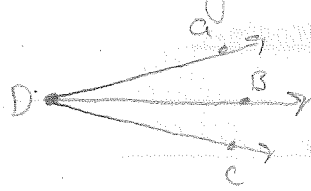
Bisect: splitting the segment or angle into two congruent parts

Segment bisector: a segment, ray, line, or plane that intersects a segment at its midpoint



can we bisect a line?

Angle bisector: a ray that divides an angle into two adjacent angles that are congruent



- Activity of finding midpoint of a segment using a compass
- If we don't have a compass, we have a formula to find coordinate of a midpoint

Midpoint Formula

If $A(x_1, y_1)$ and $B(x_2, y_2)$ are points in a coordinate plane, then the midpoint of \overline{AB} has coordinates

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) \rightarrow \text{what are we doing with the formula?}$$

Example

$C(4, 3)$ $D(-2, 0)$
 $\left(\frac{4 + (-2)}{2}, \frac{3 + 0}{2} \right)$
 $\left(1, \frac{3}{2} \right)$

Students do

$E(4, -4)$ $F(1, 7)$ | $G(2, 9)$ $H(-3, 6)$
 $I(-8, 3)$ $J(3, 0)$

Finding coordinate of endpoint of a segment (using midpoint backwards)

Midpoint of \overline{KL} is @ $(6, -2)$ and one endpoint is at $K(4, 3)$

$$\frac{x+4}{2} = 6 \quad \frac{y+3}{2} = -2$$

Midpoint @ $(2, 4)$ and endpoint @ $(-1, 7)$, find the other endpoint

$$\frac{x-1}{2} = 2 \quad \frac{y+7}{2} = 4$$

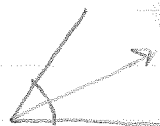
students do

$M(0, 1) \quad N(-1, 5) \quad | \quad M(3, 10) \quad P(6, -4) \quad | \quad M(0, 0) \quad R(-7, -3)$

Angle Bisector Demonstration

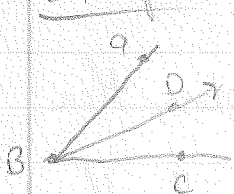


Angles are \cong



Measurement of entire angle

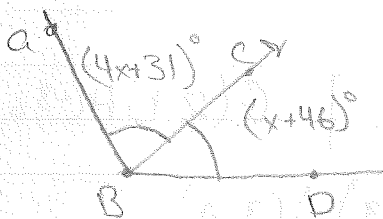
Example



$m\angle ABC = 80^\circ$

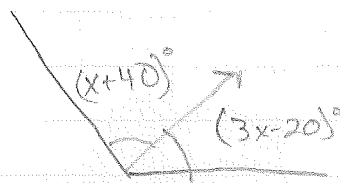
what is the measure of $\angle ABD$, $\angle DBC$?

Finding the measure of an angle



what is the value of x ?

what are the measure of the angles?

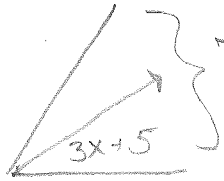


students do pg 39 # 37-39, 45 in book.

Closure

What is segment/angle bisector?

What is the midpoint formula?



, what is x ?
what are the angle measures?

$$6x+10 = 76$$

$$6x = 66$$

Homework 1.5 B