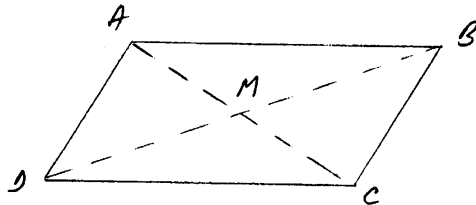


QUIZ #3 @ 50 points

Write in a neat and organized fashion. Use a pencil. Show all work to get credit.

1. Draw a parallelogram. Answer the following questions. Use math notation pertinent to your drawing:



a) How are the sides of the parallelogram?

$$\overline{AB} \parallel \overline{DC}, \quad \overline{AB} \cong \overline{DC}$$

$$\overline{AD} \parallel \overline{BC}, \quad \overline{AD} \cong \overline{BC}$$

c) How are the diagonals of the parallelogram?

$$\overline{AC} \not\cong \overline{BD}$$

$$\overline{AC} \text{ bisects } \overline{BD} : \overline{DM} \cong \overline{MB}$$

$$\overline{BD} \text{ bisects } \overline{AC} : \overline{AM} \cong \overline{MC}$$

b) How are the opposite angles of the parallelogram?

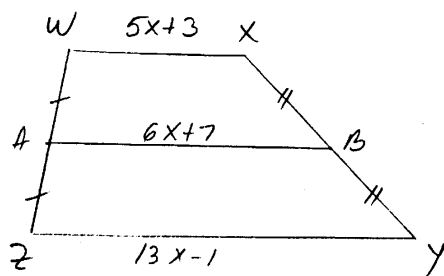
$$\angle A \cong \angle C$$

$$\angle B \cong \angle D$$

d) What is the sum of the measures of the angles?

$$m\angle A + m\angle B + m\angle C + m\angle D = 360^\circ$$

2. Let WXYZ a trapezoid with bases $WX = 5x + 3$ and $ZY = 13x - 1$. If the median $AB = 6x + 7$, find x . Justify your answer.



2

Given: WXYZ trapezoid

$$WX = 5x + 3$$

$$ZY = 13x - 1$$

AB - median

$$AB = 6x + 7$$

Find x

Solution

AB - median \Rightarrow

$$AB = \frac{1}{2}(WX + ZY)$$

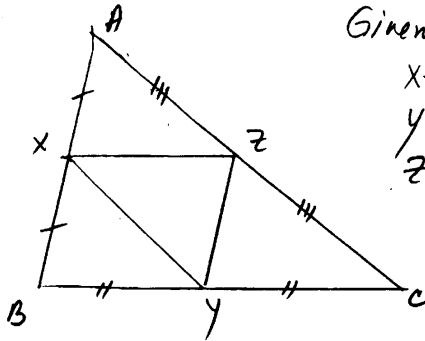
$$6x + 7 = \frac{1}{2}(5x + 3 + 13x - 1)$$

$$12x + 14 = 18x + 2$$

$$14 - 2 = 18x - 12x$$

$$6x = 12 \Rightarrow x = 2$$

3. Given $\triangle ABC$ with X, Y, Z midpoints of the respective sides with $AB = 10\text{cm}$, $BC = 14\text{cm}$, and $AC = 18\text{cm}$ find XY, YZ, and XZ. Justify your answers.



Given: $\triangle ABC$
 X - midpt \overline{AB}
 Y - midpt \overline{BC}
 Z - midpt \overline{AC}
 $AB = 10\text{cm}$
 $BC = 14\text{cm}$
 $AC = 18\text{cm}$

Find: XY, YZ, XZ

Solution

X, Z - midpts $\Rightarrow XZ = \frac{1}{2} BC$

$XZ = \frac{1}{2} 14 = 7\text{cm}$

X, Y - midpts $\Rightarrow XY = \frac{1}{2} AC$

$XY = \frac{1}{2} 18 = 9\text{cm}$

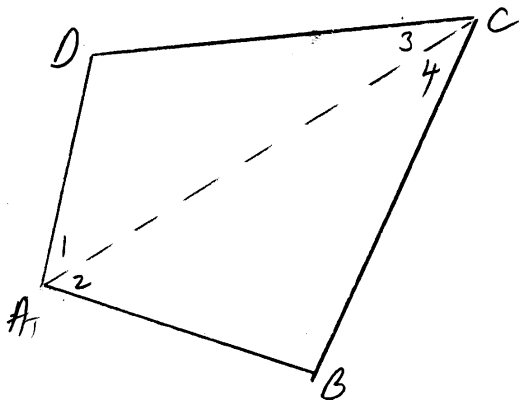
Y, Z - midpts $\Rightarrow YZ = \frac{1}{2} AB$

$YZ = \frac{1}{2} 10 = 5\text{cm}$

4. Prove the following property (formal proof):

The sum of the interior angles of a quadrilateral is 360 degrees.

Make sure you state the hypothesis and conclusion using math notation pertinent to your drawing.



Given: $ABCD$ - quadrilateral

Prove $m\angle A + m\angle B + m\angle C + m\angle D = 360^\circ$

Proof

Reasons

- Statements
1. $ABCD$ - quod.
 2. draw \overline{AC}
 3. $m\angle 1 + m\angle 3 + m\angle D = 180^\circ$ ($\triangle AOC$)
 3. $m\angle 2 + m\angle 4 + m\angle B = 180^\circ$ ($\triangle ABC$)
 4. $(m\angle 1 + m\angle 3 + m\angle D) + (m\angle 2 + m\angle 4 + m\angle B) = 360^\circ$
 5. $(m\angle 1 + m\angle 2) + m\angle B + (m\angle 3 + m\angle 4) + m\angle D = 360^\circ$
 6. $m\angle 1 + m\angle 2 = m\angle A$
 6. $m\angle 3 + m\angle 4 = m\angle C$
 7. $m\angle A + m\angle B + m\angle C + m\angle D = 360^\circ$

1. given
2. Two pts determine a line
3. Sum \angle 's in $\triangle = 180^\circ$
4. + prop. of =
5. Associative prop of +
6. Angle-Addition Postulate
7. Substitution

(5.6)

Q.E.D.