Activity 3.8.1: Applying Triangle Congruence in Constructing Angle Bisectors and Perpendicular Lines

Total points = 37

A. Answers

- 1. SAS Triangle Congruence Postulate 🗸
- 2. $\overline{AY} \cong \overline{DY}, \sqrt{MY} \cong \overline{MY}, \sqrt{MA} \cong \overline{MD}$
- 3. $\angle A \cong \angle D, \checkmark \angle YMA \cong \angle YMD, \checkmark \angle MYA \cong \angle MYD, \checkmark$
- 4. ∠MYA and ∠MYD, ✓ ∠YMA and ∠YMD ✓
- 5. $m \angle MYA = m \angle MYD \checkmark$
 - $m\angle DYA = m\angle MYA + m\angle MYD\checkmark$
 - $m\angle DYA = m\angle MYA + m\angle MYA\checkmark$
 - $m\angle DYA = 2m\angle MYA\checkmark$
 - $\frac{m\angle DYA}{2} = \frac{2m\angle MYA}{2}$
 - $\frac{1}{2}m\angle DYA = m\angle MYA\checkmark$
 - $m \angle MYA = \frac{1}{2} m \angle DYA \checkmark$
 - $m \angle YMA = m \angle YMD \checkmark$
 - $m\angle DMA = m\angle YMA + m\angle YMD\checkmark$
 - $m\angle DMA = m\angle YMA + m\angle YMA\checkmark$
 - $m\angle DMA = 2m\angle YMA\checkmark$
 - $\frac{m\angle DMA}{2} = \frac{2m\angle YMA}{2}$
 - $\frac{1}{2}$ m $\angle DMA = m\angle YMA\checkmark$
 - $m\angle YMA = \frac{1}{2}m\angle DMA\checkmark$
- 6. YM bisects angles ∠DYA and ∠DMA. ✓

B. Answers

- 1. HA Triangle Congruence Theorem ✓
- 2. $\overline{XA} \cong \overline{DX}, \sqrt{\overline{AY}} \cong \overline{XC}, \sqrt{\overline{XY}} \cong \overline{DC} \checkmark$
- 3. $\angle A \cong \angle CXD, \checkmark \angle AYX \cong \angle XCD, \checkmark \angle AXY \cong \angle D \checkmark$
- 4. ∠AXY and ∠DXC v
- 5. $m\angle A + m\angle AXY + m\angle AYX = 180^{\circ} \checkmark$
 - $m\angle CXD + m\angle AXY + m\angle AYX = 180^{\circ} \checkmark$
 - $m\angle CXD + m\angle AXY + 90^{\circ} = 180^{\circ} \checkmark$
 - $m\angle CXD + m\angle AXY + 90^{\circ} 90^{\circ} = 180^{\circ} 90^{\circ}$
 - $m\angle CXD + m\angle AXY = 90^{\circ} \checkmark$
 - $\therefore \overline{AX} \perp \overline{DX}$

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- $m\angle DYA = 2m\angle MYA \checkmark$
 - $\frac{m\angle DYA}{m} = \frac{2m\angle MYA}{m}$ 2
- $\frac{1}{2}$ m\times DYA = m\times MYA\sqrt{
- $m \angle MYA = \frac{1}{2} m \angle DYA \checkmark$
- $m \angle YMA = m \angle YMD \checkmark$
- $m\angle DMA = m\angle YMA + m\angle YMD\checkmark$
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- $m\angle YMA = \frac{1}{2}m\angle DMA\checkmark$
- 6. \overline{YM} bisects angles $\angle DYA$ and $\angle DMA$. \checkmark B. Answers
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- 2. $\overline{XA} \cong \overline{DX}, \checkmark \overline{AY} \cong \overline{XC}, \checkmark \overline{XY} \cong \overline{DC} \checkmark$
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- 4. ∠AXY and ∠DXC ✓
- 5. $m\angle A + m\angle AXY + m\angle AYX = 180^{\circ} \checkmark$
- $m\angle CXD + m\angle AXY + m\angle AYX = 180^{\circ} \checkmark$
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- 5. $m \angle MYA = m \angle MYD \checkmark$
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 - $m\angle DYA = 2m\angle MYA\checkmark$
 - $\frac{m\angle DYA}{2} = \frac{2m\angle MYA}{2}$

$$\frac{m \geq m}{2} = \frac{2m \geq m}{2}$$

- $\frac{1}{2}$ m \angle DYA = m \angle MYA \checkmark
- $m \angle MYA = \frac{1}{2} m \angle DYA \checkmark$
- $m\angle YMA = m\angle YMD\checkmark$
- $m\angle DMA = m\angle YMA + m\angle YMD\checkmark$
- $m\angle DMA = m\angle YMA + m\angle YMA\checkmark$
- m/DMA = 2m/YMA
- $\frac{m\angle DMA}{2} = \frac{2m\angle YMA}{2}$
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- 1. HA Triangle Congruence Theorem 🗸
- 2. $\overline{XA} \cong \overline{DX}$, $\sqrt{AY} \cong \overline{XC}$, $\sqrt{XY} \cong \overline{DC}$ $\sqrt{AXY} \cong \overline{DC}$ $\sqrt{AXY} \cong \overline{AXY} \cong \overline{AXX} \cong \overline{AXY} \cong \overline{AXX} \cong \overline{A$
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