Name: _____  Date: _____
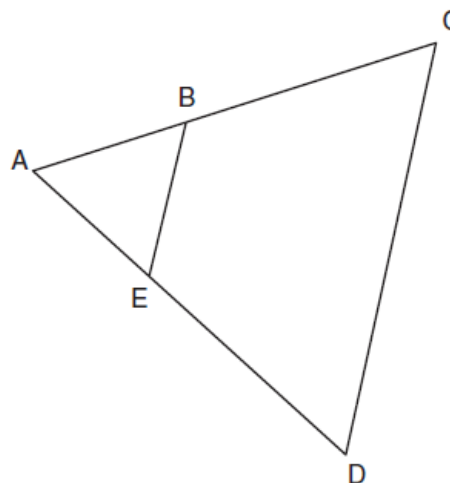
**UNIT 5**                                                    **LESSON 11**

**AIM: CORRESPONDING SIDES OF SIMILAR TRIANGLES ARE IN PROPORTION**

*Do Now:* In the diagram below of $\triangle ACD$, E is a point on $\overline{AD}$ and B is a point on $\overline{AC}$, such that $\overline{EB} \parallel \overline{DC}$.

If $AE = 3$, $ED = 6$, and $DC = 15$, find the length of $\overline{EB}$.

**NOTES:**

- **WHY** were you able to set up a proportion and solve for the missing side length in the do now?

- **WHAT** made the triangles similar in the do now?

- Therefore, after you prove triangles are similar using _____, it can be stated that

  _____ _____ of _____ _____ are

  _____ _____!

- How will you know if a proof requires you to state that corresponding sides of similar triangles are in

  proportion? The prove statement will be a _____.

- Before you can state that corresponding sides of similar triangles are in proportion, you must always

  prove triangles are _____ using _____ first!

1. Given: Q is a point on $\overline{PR}$, S is a point on $\overline{TR}$, $\overline{QS}$ is drawn

   $\triangle RPT \cong \triangle RQS$

   Prove: $\dfrac{PR}{RT} = \dfrac{QR}{RS}$

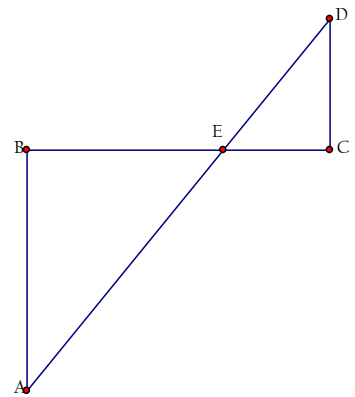   *What triangles do we need to prove are similar first?*
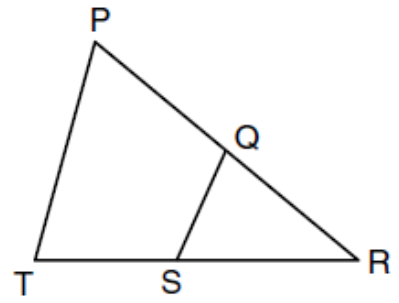
| STATEMENT | REASON |
|---|---|
|  |  |

2. Given: $\overline{DC} \perp \overline{BC}$, $\overline{AB} \perp \overline{BC}$

   Prove: $\dfrac{AB}{EB} = \dfrac{DC}{EC}$

   *What triangles do we need to prove are similar first?*
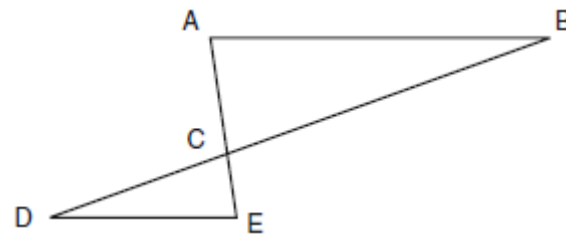
| STATEMENT | REASON |
|---|---|
|  |  |

2

3. Given: $\overline{AE}$ and $\overline{BD}$ intersect at C, and $\overline{AB}//\overline{ED}$

Prove: $\dfrac{AB}{BC} = \dfrac{ED}{DC}$

*What triangles do we need to prove are similar first?*
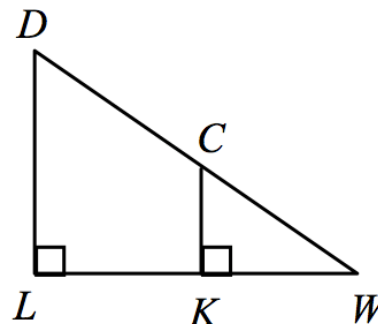
| STATEMENT | REASON |
|---|---|
| | |

4. Given: $\triangle DLW$ is a right triangle

$\overline{KC} \perp \overline{LW}$

Prove: $\dfrac{DW}{LW} = \dfrac{CW}{KW}$

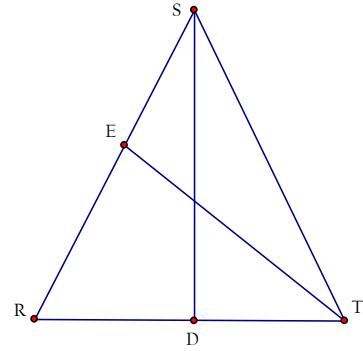*What triangles do we need to prove are similar first?*

| STATEMENT | REASON |
|---|---|
| | |

5. Given: $\triangle SRT$ with $\overline{SR} \cong \overline{ST}$
   $\overline{TE} \perp \overline{RS}$ , $\overline{SD} \perp \overline{RT}$

   Prove: $ER \times SD = TE \times DT$

   *What triangles do we need to prove are similar first?*

| STATEMENT | REASON |
|---|---|
| | |

## SUMAMRY- ORDER MATTERS!
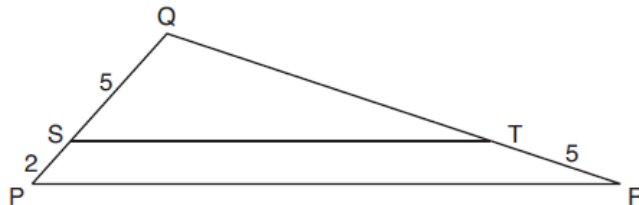
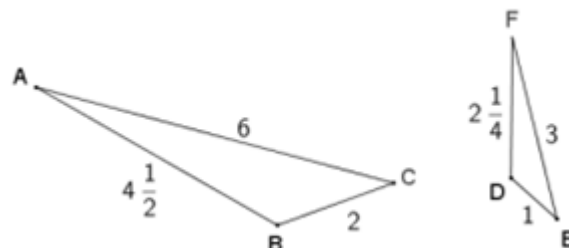| | PROVE STATEMENT | REASON |
|---|---|---|
| 1. | Similarity Statement<br><br>$\triangle ABC \sim \triangle DEF$ | $AA \cong AA$ |
| 2. | Proportion<br><br>$\dfrac{AB}{BC} = \dfrac{DE}{EF}$ | Corresponding sides of similar triangles are in proportion. |

4

## HOMEWORK

1. In the diagram below of $\triangle PQR$, $\overline{ST}$ is drawn parallel to $\overline{PR}$, $PS = 2$, $SQ = 5$, and $TR = 5$. What is the length of $\overline{QR}$?
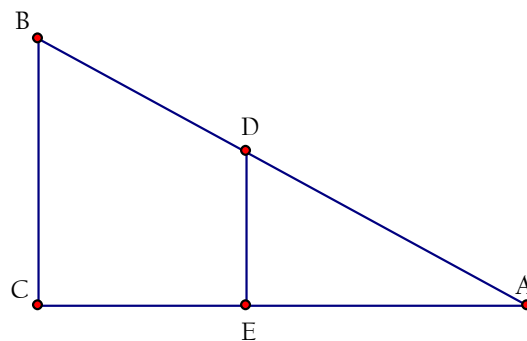
2. Given the pairs of triangles, determine if the triangles are similar or not, *explain*.

3. Given: In right triangle *ABC*, $\angle C = 90°$, $\overline{DE} \perp \overline{AC}$

   Prove: $\dfrac{AD}{ED} = \dfrac{AB}{CB}$

*What triangles do we need to prove are similar first?*

| STATEMENT | REASON |
|---|---|
|  |  |