

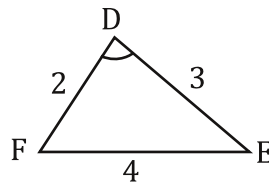
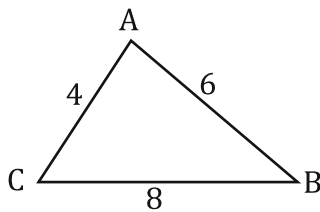
Similar Triangles

The same but not quite....

Triangle similarity and triangle congruence are almost the same thing. That's a big "almost" though. Congruent triangles have the same size and shape, and similar triangles have the same shape but DIFFERENT sizes.

Triangle similarity also has "DNA tests" (Just like congruence had SSS, SAS, ASA, etc.) to tell whether or not they are in fact similar. They are AAA, AA, SAS, and SSS. We will of course go over these now and explain the difference between them and their congruency counterparts.

SSS is first. It means that if all three sides of two triangles have the same RATIO then the triangles are similar. Let's see...



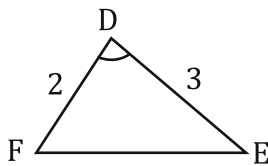
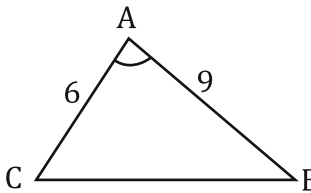
$$\frac{DF}{AC} = \frac{2}{4} = \frac{1}{2} \quad \text{So...} \quad \frac{DF}{AC} = \frac{DE}{AB} = \frac{EF}{BC}$$

$$\frac{DE}{AB} = \frac{3}{6} = \frac{1}{2}$$

$$\frac{EF}{BC} = \frac{4}{8} = \frac{1}{2} \quad \text{So... } \Delta ABC \sim \Delta DEF \text{ by SSS}$$

By the way, "~" means "similar" or "is similar to."

SAS is next. It means that if two sides of two triangles have the same RATIO and the angle between the sides are CONGRUENT, then the triangles are similar. Let's see...



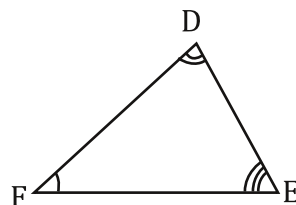
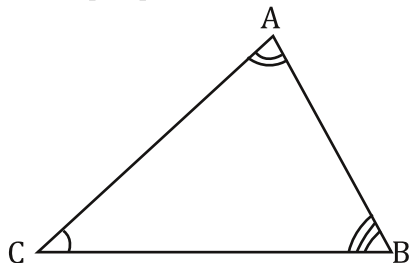
$$\frac{DF}{AC} = \frac{2}{6} = \frac{1}{3} \quad \text{So...} \quad \frac{DF}{AC} = \frac{DE}{AB}$$

$$\frac{DE}{AB} = \frac{3}{9} = \frac{1}{3} \quad \text{and... } \angle A \cong \angle D$$

$$\text{So... } \Delta ABC \sim \Delta DEF \text{ by SAS}$$

I can't stress enough that the angles that are congruent must be BETWEEN the sides that have equal ratios. If not, you get ASS and its backward evil twin SSA, and they don't work for similarity either!

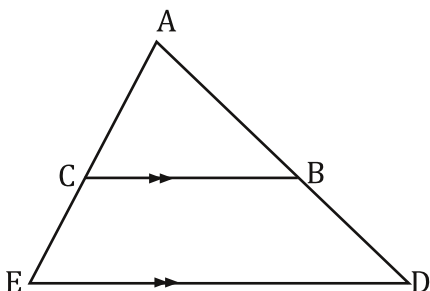
AAA and AA go together. If all three angles of one triangle are congruent to all three angles of another then the triangles are similar. But what about AA? Well, if you have two angles inside a triangle can you not solve for the third because their sum is 180°? Of course you can! So having 2 angles is the same as having three angles for similarity. I like to always use AA but sometimes you will see people use AAA. It's unnecessary, but I thought I would warn you. Let's see this one...



$$\angle C \cong \angle F \quad \Delta ABC \sim \Delta DEF \text{ by AAA}$$

$$\angle A \cong \angle D \quad \text{or...}$$

$$\angle B \cong \angle E \quad \Delta ABC \sim \Delta DEF \text{ by AA}$$



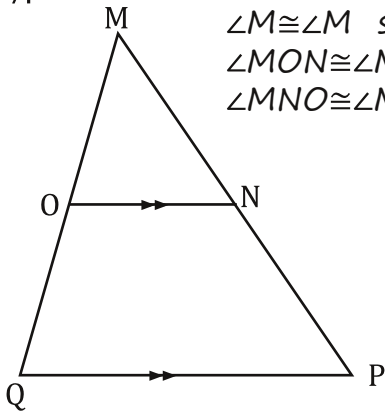
$$\angle ABC \cong \angle ADE \text{ Corresponding Angles}$$

$$\angle ACB \cong \angle AED \text{ Corresponding Angles}$$

$$\Delta ABC \sim \Delta ADE \text{ by AA}$$

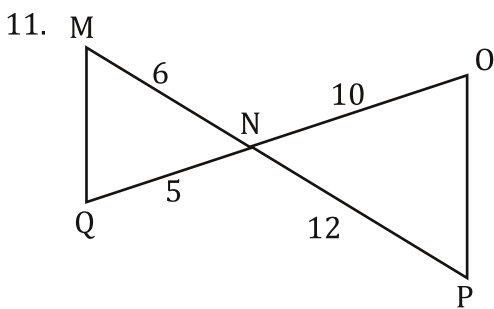
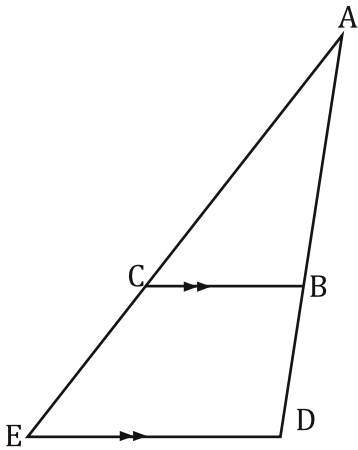
To the similarity mobile! Let's practice...

7. $\angle M \cong \angle M$ same angle
 $\angle MON \cong \angle MQP$ corresponding
 $\angle MNO \cong \angle MPQ$ corresponding

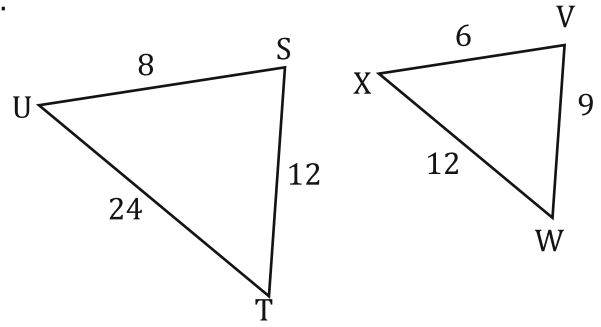


$\triangle MNO \sim \triangle MPQ$ by AAA
 or...
 $\triangle MNO \sim \triangle MPQ$ by AA

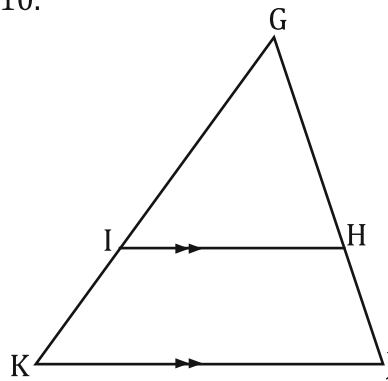
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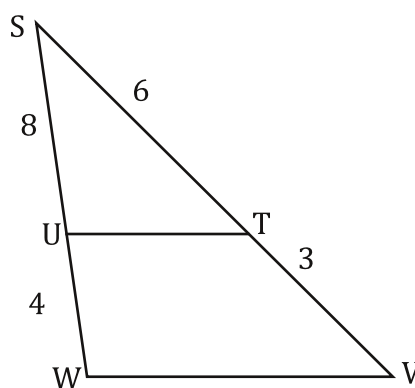
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10.



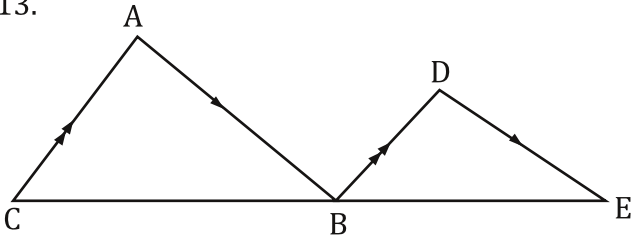
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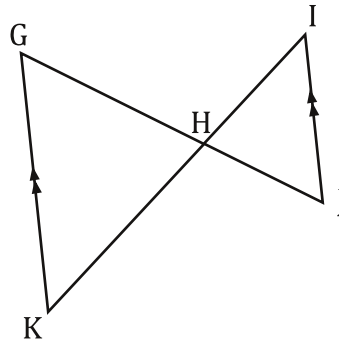
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<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.
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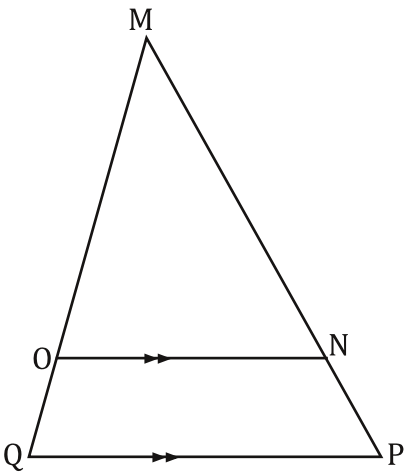
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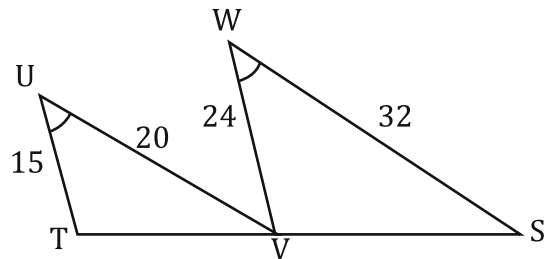
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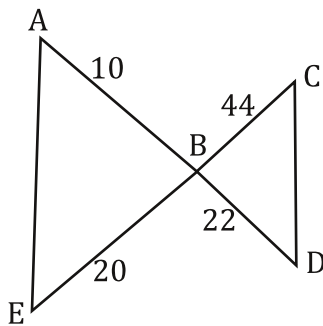
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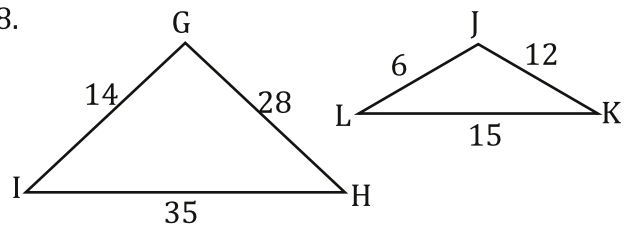
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17.



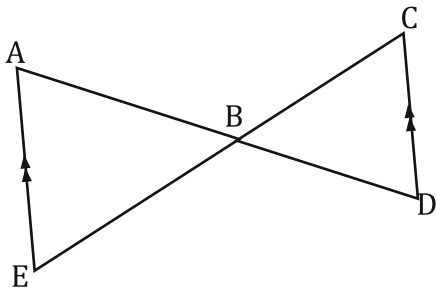
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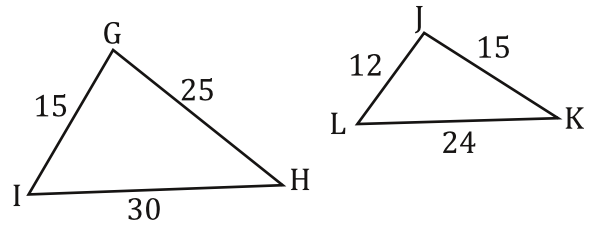
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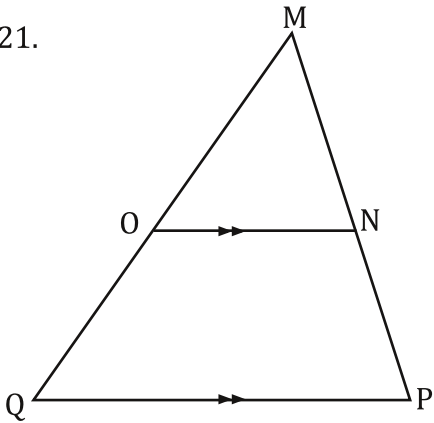
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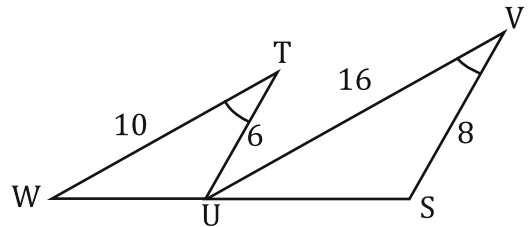
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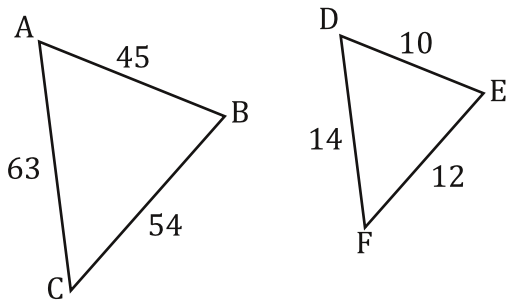
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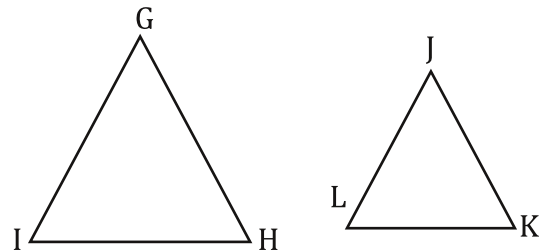
22.



23.



24. $\triangle GHI$ and $\triangle JKL$ are both equilateral.

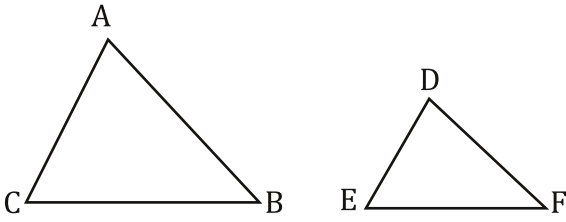


Bubble the correct answer choice from each item above.

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<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.
<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.

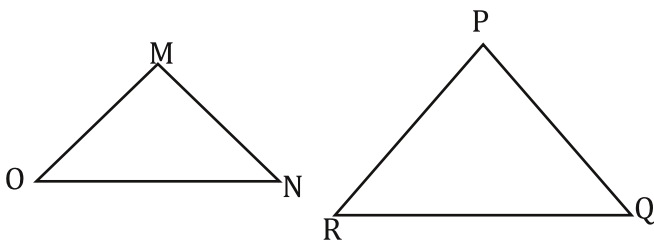
Choose the best choice.

25. $\frac{AB}{DF} = \frac{BC}{EF}$ What additional information is necessary to show $\triangle ABC \sim \triangle DEF$ by SSS?



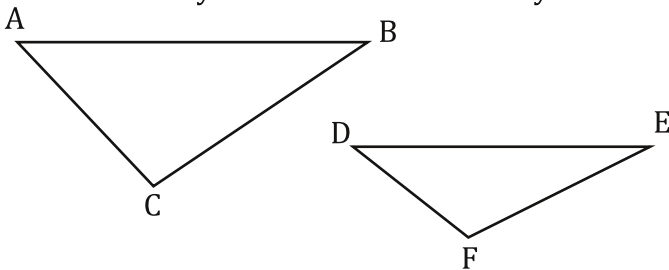
- A. $\frac{AB}{AC} = \frac{BC}{EF}$ C. $\frac{AC}{DF} = \frac{AC}{EF}$
 B. $\frac{AC}{DE} = \frac{BC}{EF}$ D. $\frac{CB}{AB} = \frac{EF}{DF}$

27. $\angle M \cong \angle P$. What additional information is necessary to show that $\triangle MNO \sim \triangle PQR$ by AA?



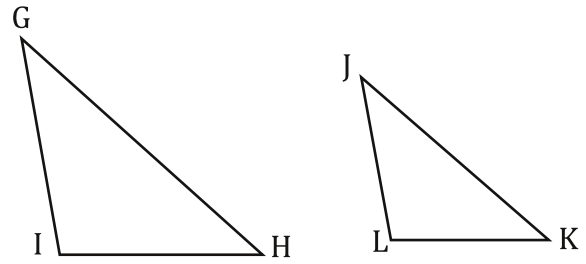
- A. $\angle M \cong \angle O$
 B. $\angle P \cong \angle R$
 C. $\angle N \cong \angle P$
 D. $\angle N \cong \angle Q$

29. $\angle C \cong \angle F$. What additional information is necessary to show $\triangle ABC \sim \triangle DEF$ by AA?



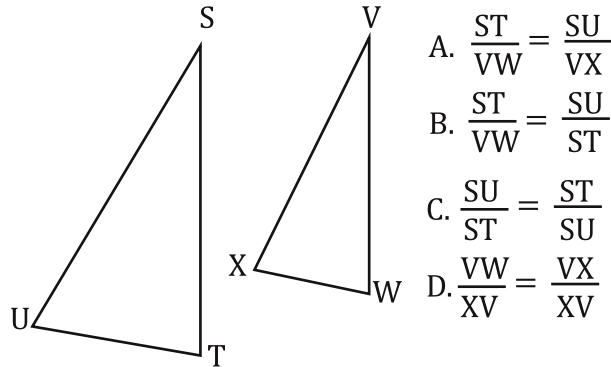
- A. $\angle C \cong \angle B$
 B. $\angle E \cong \angle F$
 C. $\angle A \cong \angle D$
 D. $\angle E \cong \angle C$

26. $\frac{GI}{JL} = \frac{IH}{LK}$ What additional information is necessary to show $\triangle GHI \sim \triangle JKL$ by SAS?



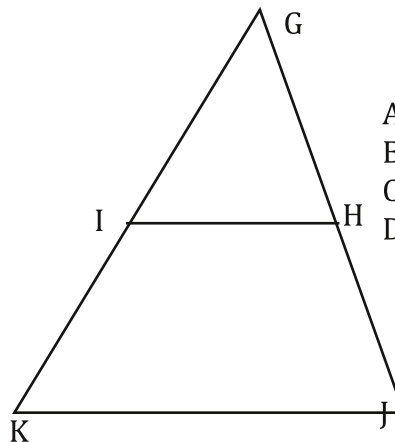
- A. $\angle G \cong \angle J$
 B. $\angle H \cong \angle K$
 C. $\angle I \cong \angle L$
 D. $\angle G \cong \angle H$

28. $\frac{SU}{VX} = \frac{UT}{VW}$ What additional information is necessary to show $\triangle STU \sim \triangle VWX$ by SSS?



- A. $\frac{ST}{VW} = \frac{SU}{VX}$
 B. $\frac{ST}{VW} = \frac{SU}{ST}$
 C. $\frac{SU}{ST} = \frac{ST}{SU}$
 D. $\frac{VW}{XV} = \frac{VX}{XV}$

30. What additional information is necessary to show $\triangle GHI \sim \triangle GJK$ by AA?

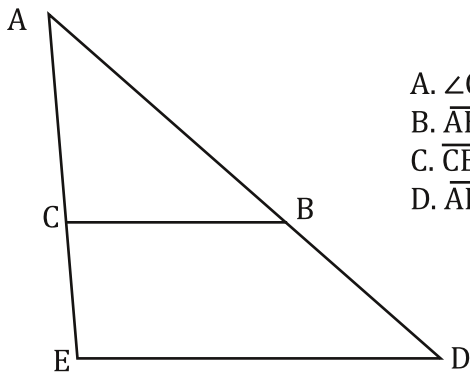


- A. $\overline{GI} \cong \overline{GH}$
 B. $\overline{GK} \parallel \overline{GJ}$
 C. $\overline{IH} \cong \overline{KJ}$
 D. $\overline{IH} \parallel \overline{KJ}$

Bubble the correct answer choice from each item above.

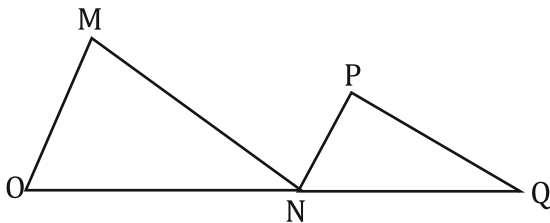
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<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.

31. What additional information is necessary to show $\triangle ABC \sim \triangle ADE$ by AA?



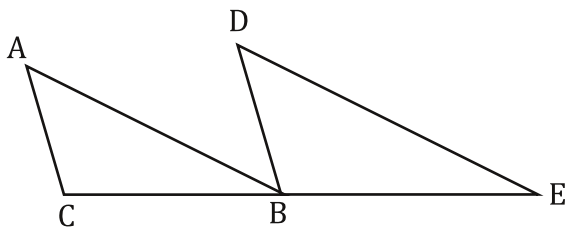
- A. $\angle C \cong \angle A$
- B. $\overline{AE} \parallel \overline{AD}$
- C. $\overline{CB} \parallel \overline{ED}$
- D. $\overline{AE} \parallel \overline{CB}$

33. $OM \parallel NP$. What additional information is necessary to show $\triangle MNO \sim \triangle PNO$ by SAS?



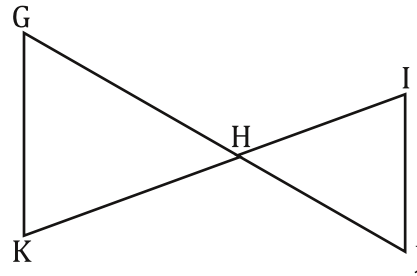
- A. $\frac{MN}{PQ} = \frac{NO}{QN}$
- B. $\frac{OM}{MN} = \frac{NP}{NQ}$
- C. $\frac{OM}{NP} = \frac{MN}{PQ}$
- D. $\frac{OM}{NP} = \frac{ON}{NQ}$

35. $AB \parallel DE$. What additional information is necessary to show $\triangle ABC \sim \triangle DEF$ by SAS?



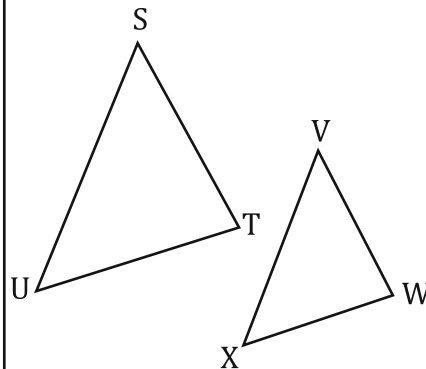
- A. $\frac{AB}{DE} = \frac{BC}{EB}$
- B. $\frac{AC}{DB} = \frac{AB}{DE}$
- C. $\frac{BC}{EB} = \frac{AC}{DB}$
- D. $\frac{AC}{AB} = \frac{BD}{DE}$

32. What additional information is necessary to show $\triangle GHK \sim \triangle IJH$ by AA?



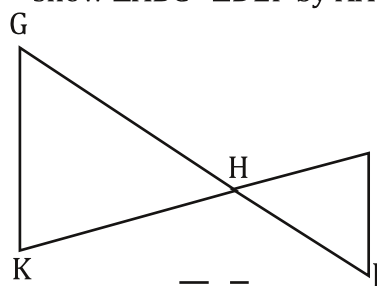
- A. $\angle G \cong \angle IHJ$
- B. $\angle K \cong \angle G$
- C. $\overline{GK} \parallel \overline{IK}$
- D. $\overline{GK} \parallel \overline{IJ}$

34. $\frac{ST}{VW} = \frac{TU}{WX}$ What additional information is necessary to show $\triangle STU \sim \triangle VWX$ by SAS?



- A. $\angle W \cong \angle V$
- B. $\angle T \cong \angle W$
- C. $\angle V \cong \angle S$
- D. $\angle U \cong \angle X$

36. What additional information is necessary to show $\triangle ABC \sim \triangle DEF$ by AA?



- A. $\overline{GK} \parallel \overline{IJ}$
- B. $\angle K \cong \angle IJH$
- C. $\overline{GK} \parallel \overline{GJ}$
- D. $\overline{GH} \parallel \overline{JH}$

Bubble the correct answer choice from each item above.

#31.	#32.	#33.	#34.	#35.	#36.
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