Name _____   Date _____
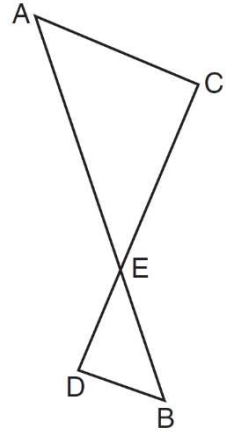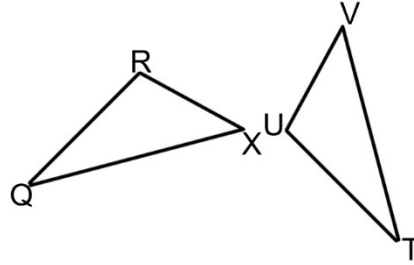Mr. Schlansky   Geometry

Determining If a Proportion Is Correct

1. As shown in the diagram below, $\overline{AB}$ and $\overline{CD}$ intersect at E, and $\overline{AC} \parallel \overline{BD}$.
Given $\triangle AEC \sim \triangle BED$, which equation is true?

1) $\dfrac{CE}{DE} = \dfrac{EB}{EA}$

2) $\dfrac{AE}{BE} = \dfrac{AC}{BD}$

3) $\dfrac{EC}{AE} = \dfrac{BE}{ED}$

4) $\dfrac{ED}{EC} = \dfrac{AC}{BD}$

2. In the diagram below, $\triangle QRX \sim \triangle TUV$. Which of the following statements is *not* true?
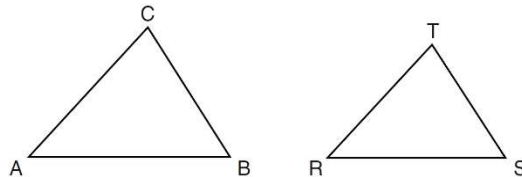
1) $\dfrac{\overline{QR}}{\overline{TU}} = \dfrac{\overline{QX}}{\overline{TV}}$

2) $\dfrac{\angle X}{\angle V} = \dfrac{\angle Q}{\angle T}$

3) $\dfrac{\overline{RX}}{\overline{UV}} = \dfrac{\overline{VT}}{\overline{XQ}}$

4) $\dfrac{\overline{QX}}{\overline{QR}} = \dfrac{\overline{TV}}{\overline{TU}}$

3. Given that $\triangle DEF \sim \triangle HIJ$, which is the correct statement about their corresponding sides?

1) $\dfrac{\overline{EF}}{\overline{IJ}} = \dfrac{\overline{DE}}{\overline{HI}}$

2) $\dfrac{\overline{EF}}{\overline{HI}} = \dfrac{\overline{IJ}}{\overline{DE}}$

3) $\dfrac{\overline{DE}}{\overline{HJ}} = \dfrac{\overline{EF}}{\overline{HI}}$

4) $\dfrac{\overline{DE}}{\overline{JI}} = \dfrac{\overline{EF}}{\overline{HJ}}$

4. In the diagram below, $\triangle ABC \sim \triangle RST$.

Which statement is *not* true?

1) $\angle A \cong \angle R$

2) $\dfrac{AB}{RS} = \dfrac{BC}{ST}$

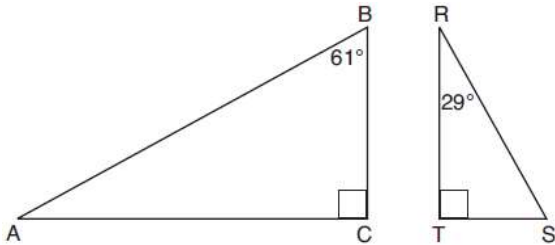3) $\dfrac{AB}{BC} = \dfrac{ST}{RS}$

4) $\angle B \cong \angle S$

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5. Scalene triangle ABC is similar to triangle DEF. Which statement is *false*?

1) $\dfrac{\overline{AB}}{\overline{BC}} = \dfrac{\overline{DE}}{\overline{EF}}$

2) $\dfrac{\overline{AC}}{\overline{DF}} = \dfrac{\overline{BC}}{\overline{EF}}$

3) $\angle ACB \cong \angle DFE$

4) $\angle ABC \cong \angle EDF$

6. Given right triangle ABC with a right angle at C, $m\angle B = 61°$. Given right triangle RST with a right angle at T, $m\angle R = 29°$.

Which proportion in relation to $\triangle ABC$ and $\triangle RST$ is *not* correct?

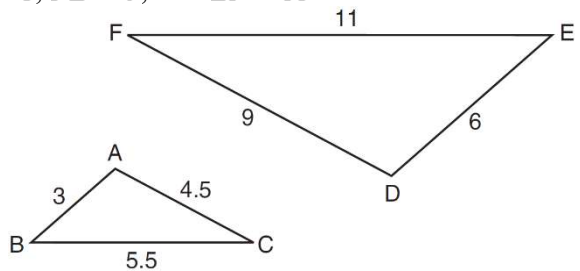1) $\dfrac{AB}{RS} = \dfrac{RT}{AC}$

2) $\dfrac{BC}{ST} = \dfrac{AB}{RS}$

3) $\dfrac{BC}{ST} = \dfrac{AC}{RT}$

4) $\dfrac{AB}{AC} = \dfrac{RS}{RT}$

7. In the diagram below, $\triangle DEF$ is the image of $\triangle ABC$ after a clockwise rotation of $180°$ and a dilation where $AB = 3$, $BC = 5.5$, $AC = 4.5$, $DE = 6$, $FD = 9$, and $EF = 11$.

Which relationship must always be true?

1) $\dfrac{m\angle A}{m\angle D} = \dfrac{1}{2}$

2) $\dfrac{m\angle C}{m\angle F} = \dfrac{2}{1}$

3) $\dfrac{m\angle A}{m\angle C} = \dfrac{m\angle F}{m\angle D}$

4) $\dfrac{m\angle B}{m\angle E} = \dfrac{m\angle C}{m\angle F}$

8. In the diagram below of isosceles triangle AHE with the vertex angle at H, $\overline{CB} \perp \overline{AE}$ and $\overline{FD} \perp \overline{AE}$.

Which statement is always true?

1) $\dfrac{AH}{AC} = \dfrac{EH}{EF}$

2) $\dfrac{AC}{EF} = \dfrac{AB}{ED}$

3) $\dfrac{AB}{ED} = \dfrac{CB}{FE}$

4) $\dfrac{AD}{AB} = \dfrac{BE}{DE}$