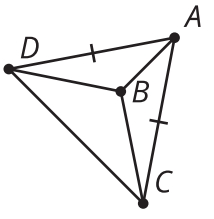
Lesson 6 Practice Problems

1. Triangle DAC is isosceles with congruent sides AD and AC. Which additional given information is sufficient for showing that triangle DBC is isosceles? Select **all** that apply.



   A. Line AB is an angle bisector of DAC.

   B. Angle BAD is congruent to angle ABC.

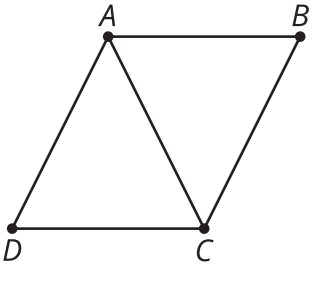
   C. Angle BDC is congruent to angle BCD.

   D. Angle ABD is congruent to angle ABC.

   E. Triangle DAB is congruent to triangle CAB.

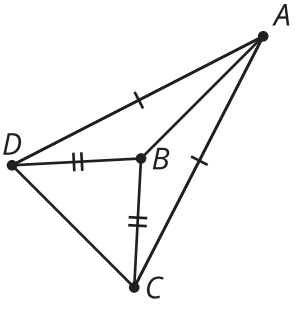
2. Tyler has written an incorrect proof to show that quadrilateral $ABCD$ is a parallelogram. He knows segments AB and DC are congruent. He also knows angles ABC and ADC are congruent. Find the mistake in his proof.

   Segment AC is congruent to itself, so triangle ABC is congruent to triangle ADC by Side-Angle-Side Triangle Congruence Theorem. Since the triangles are congruent, so are the corresponding parts, and so angle DAC is congruent to ACB. In quadrilateral $ABCD$, AB is congruent to CD and AD is parallel to CB. Since AD is parallel to CB, alternate interior angles DAC and BCA are congruent. Since alternate interior angles are congruent, AB must be parallel to CD. Quadrilateral $ABCD$ must be a parallelogram since both pairs of opposite sides are parallel.

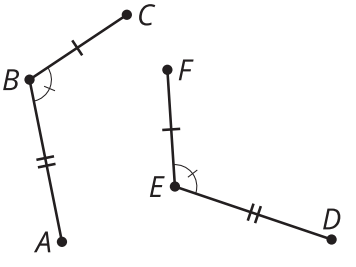


3. Triangles ACD and BCD are isosceles. Angle BAC has a measure of 18 degrees and angle BDC has a measure of 48 degrees. Find the measure of angle ABD.

   $\overline{AD} \cong \overline{AC}$ **and** $\overline{BD} \cong \overline{BC}$



4. Here are some statements about 2 zigzags. Put them in order to prove figure ABC is congruent to figure DEF.



   - 1: If necessary, reflect the image of figure ABC across DE to be sure the image of C, which we will call C', is on the same side of DE as F.
   - 2: C' must be on ray EF since both C' and F are on the same side of DE and make the same angle with it at E.
   - 3: Segments AB and DE are the same length so they are congruent. Therefore, there is a rigid motion that takes AB to DE. Apply that rigid motion to figure ABC.
   - 4: Since points C' and F are the same distance along the same ray from E they have to be in the same place.
   - 5: Therefore, figure ABC is congruent to figure DEF.

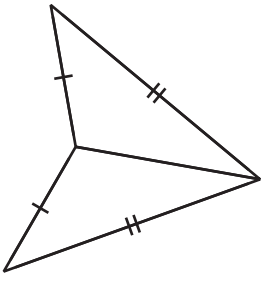
(From Unit 2, Lesson 5.)

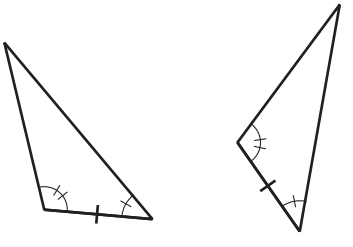
5. Match each statement using only the information shown in the pairs of congruent triangles.

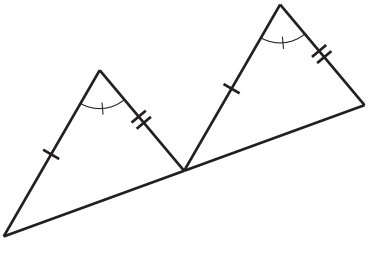
   A. The 2 angles and the included side of one triangle are congruent to 2 angles and the included side of another triangle.

   B. In the 2 triangles there are 3 pairs of congruent sides.

   C. The 2 sides and the included angle of one triangle are congruent to 2 sides and the included angle of another triangle.

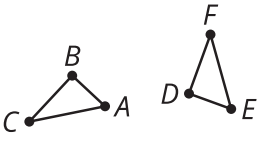
1. 

2. 

3. 

(From Unit 2, Lesson 4.)

6. Triangle ABC is congruent to triangle EDF. So, Priya knows that there is a sequence of rigid motions that takes ABC to EDF.



   Select **all** true statements after the transformations:

A. Segment AB coincides with segment EF.

B. Segment BC coincides with segment DF.

C. Segment AC coincides with segment ED.

D. Angle A coincides with angle E.

E. Angle C coincides with angle F.

(From Unit 2, Lesson 3.)