Unit 7: Similarity   Name:

8 January 2020

7.5b Do Now: Linear graphs, isosceles triangles, dilations

1. (a) Graph and label the two equations. Mark their intersection as an ordered pair.

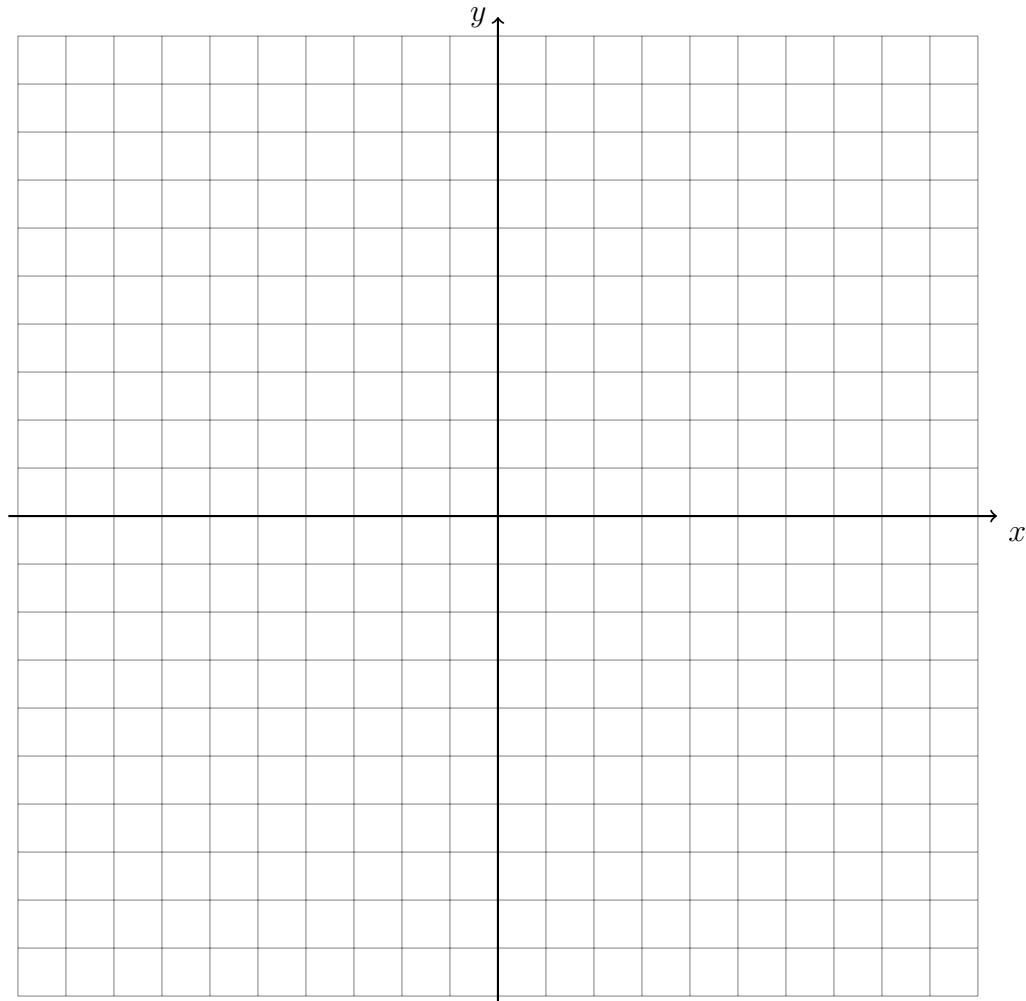$y = \frac{1}{3}x - 5$ $y = -3x + 5$ (4 pts)

   (b) Find the slopes of the two lines.   (2 points)

   $m_1 =$ $m_2 =$

   (c) Are the lines parallel, perpendicular, or neither? Justify your answer with an equation or inequality using the slopes.   (2 points)

2. (a) Graph and label the two equations. Mark their intersection as an ordered pair.

$y = \frac{1}{2}x + 3$ $\qquad\qquad\qquad$ $2x - 4y = 8$ $\qquad\qquad$ (4 pts)

(b) Find the slopes of the two lines. $\qquad\qquad\qquad\qquad$ (2 points)

$m_1 =$ $\qquad\qquad\qquad\qquad$ $m_2 =$

(c) Are the lines parallel, perpendicular, or neither? Justify your answer with an equation or inequality using the slopes. $\qquad\qquad$ (2 points)
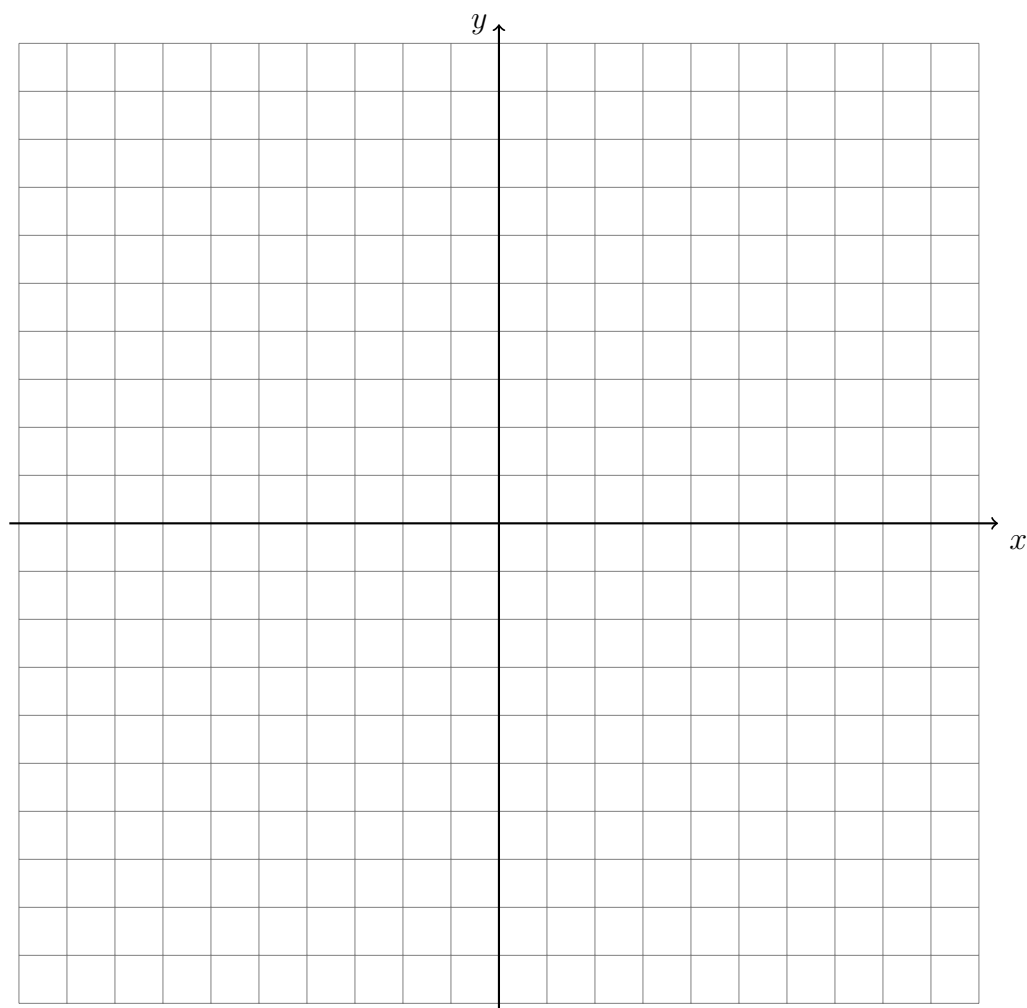
Isosceles triangles

3. Given $\triangle ABC$ is isosceles but not equilateral with $\angle B \cong \angle C$.   (*not draw to scale*)
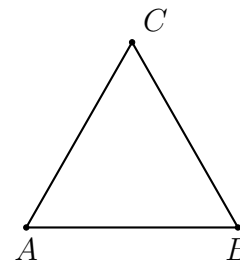
   (a) Mark the congruent sides & angles of $\triangle ABC$.

      Circle True or False:

   (b) True   False $\overline{AB} \cong \overline{BC}$

   (c) True   False $\overline{AB} \cong \overline{AC}$

   (d) True   False $\overline{BC} \cong \overline{AC}$

4. Given isosceles $\triangle ABC$ with $\overline{BC} \cong \overline{AC}$.   (*the diagram is not to scale*)

   (a) Mark the congruent sides & angles of $\triangle ABC$.
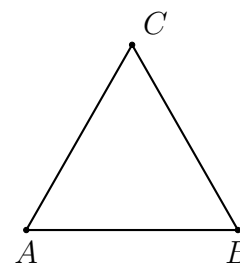
      Circle True or False:

   (b) True   False $\angle A \cong \angle B$

   (c) True   False $\angle A \cong \angle C$

   (d) True   False $\angle B \cong \angle C$

   (e) T   F $m\angle A + m\angle B + m\angle C = 180$

5. Given isosceles $\triangle RSU$ with $\overline{RS} \cong \overline{SU}$.   (*the diagram is not to scale*)

   (a) Mark the congruent sides & angles of $\triangle RSU$.

      Circle True or False:

   (b) True   False $\angle R \cong \angle RSU$

   (c) True   False $\angle R \cong \angle U$
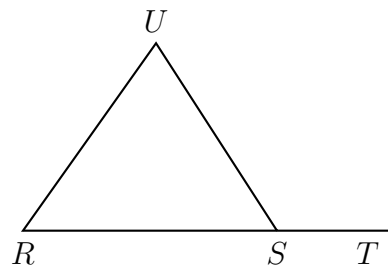
   (d) True   False $\angle RSU \cong \angle U$

   (e) True   False $\angle R \cong \angle TSU$
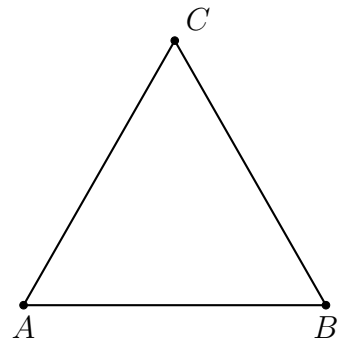
   (f) True   False $\angle RSU \cong \angle TSU$

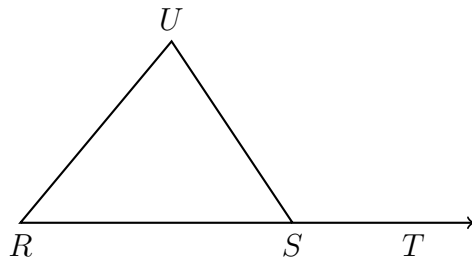   (g) True   False $m\angle RSU + m\angle TSU = 180$

   (h) True   False $m\angle R + m\angle RSU + m\angle U = 180$
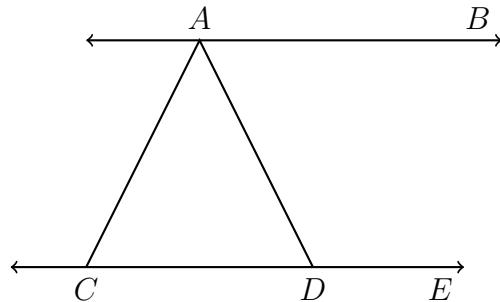
6. Given isosceles $\triangle ABC$ with $\overline{AB} \cong \overline{BC}$, $m\angle A = x$, $m\angle B = 59$, and $m\angle C = y$. Mark and label the diagram, and then find x and y.   (*the diagram is not to scale*)

7. Given isosceles $\triangle RSU$ with $\overline{RS} \cong \overline{US}$. If $m\angle UST = 133$ find $m\angle R$. (mark and label the diagram)   (*the diagram is not to scale*)

8. Given parallel lines $\overleftrightarrow{AB} \parallel \overleftrightarrow{CDE}$ with $\overline{AC} \cong \overline{CD}$. If $m\angle BAD = 66$ find $m\angle ACD$. (completely mark and label the diagram)

Similar triangles, dilations

9. A dilation centered at A maps $\triangle ABC \to \triangle ADE$. Given the sides of the preimage, $AC = 6$, $BC = 5$, $AB = 8$, and of $DE = 12$ find the scale factor k and the lengths AD and AE. Then find CE and BD.
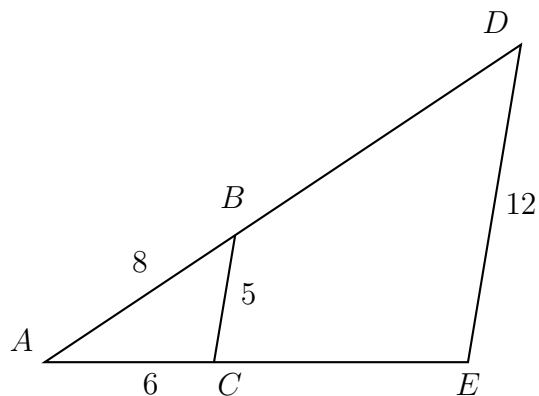
(a) $k =$

(b) $AD =$

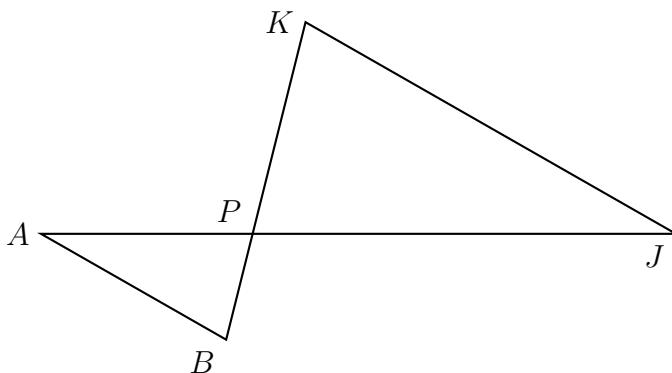(c) $AE =$

(d) $CE =$

(e) $BD =$

10. Given $\triangle ABP \sim \triangle JKP$ as shown below. $AB = 5.7$, $AP = 7.4$, $BP = 3.6$, and $KP = 9.0$. Find JK.

Spicy: Similar triangles, dilations

11. The diagram below shows $\triangle ABC \sim \triangle ADE$, with $\overline{AEB}$, $\overline{ADC}$, and $\angle ACB \cong \angle AED$. $AB = 8$, $AD = 4$, and $DE = 2$.
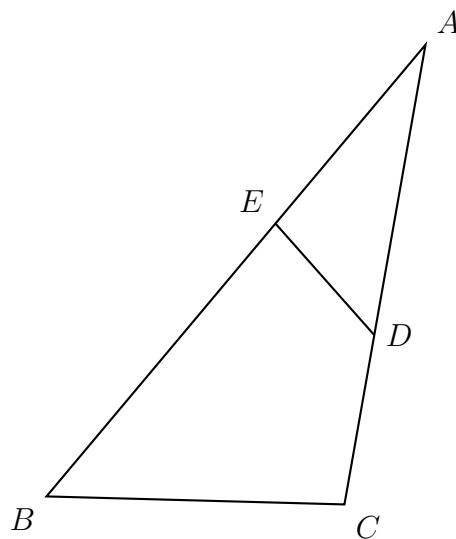
    (a) $\triangle ADE \rightarrow$ _____

    (b) $\overline{AD} \rightarrow$ _____

    (c) What is the scale factor?

    $k =$ _____

    (d) What is the length of $\overline{BC}$?

12. Given $\triangle ABC \sim \triangle ADE$ with sides $AC = 9$, $BC = 6$, $AB = 12$, and of $DE = 10$ find the scale factor k and the lengths AD and AE. Then find CD.

    (a) $k =$

    (b) $AD =$

    (c) $AE =$

    (d) $CD =$