

3 January 2020

**7.2 Homework: Similar triangles, dilations**

1. The diagram below shows  $\triangle ABC$ , with  $\overline{AEB}$ ,  $\overline{ADC}$ , and  $\angle ACB \cong \angle AED$ .  $AB = 8$ ,  $AD = 4$ , and  $DE = 2$ .

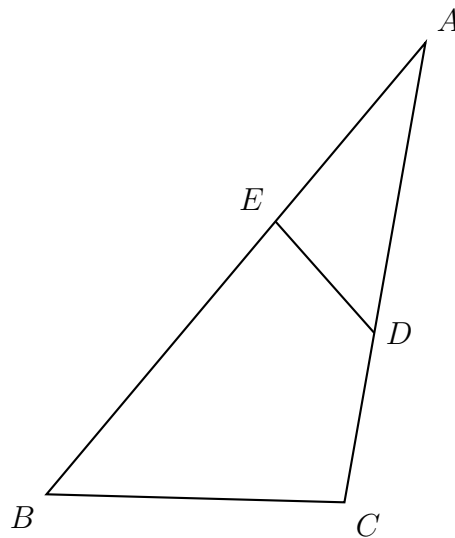
(a)  $\triangle ADE \rightarrow$  \_\_\_\_\_

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

(c) What is the scale factor?

$k =$  \_\_\_\_\_

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



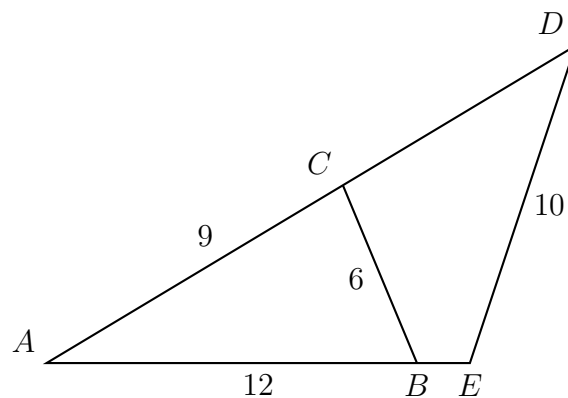
2. Given  $\triangle ABC \sim \triangle ADE$  with sides  $AC = 9$ ,  $BC = 6$ ,  $AB = 12$ , and of  $DE = 10$  find the scale factor  $k$  and the lengths  $AD$  and  $AE$ . Then find  $CD$ .

(a)  $k =$

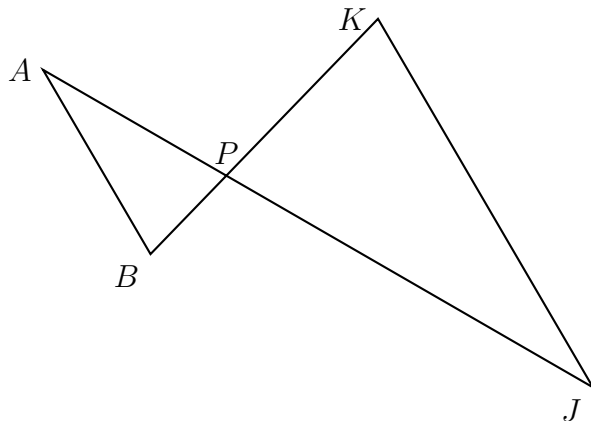
(b)  $AD =$

(c)  $AE =$

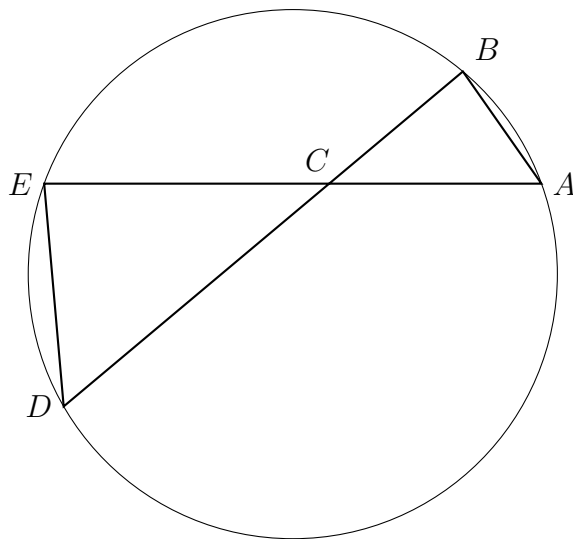
(d)  $CD =$



3. Given  $\triangle ABP \sim \triangle JKP$  as shown below.  $AB = 9.6$ ,  $AP = 12.0$ ,  $BP = 6.3$ , and  $JP = 18.0$ . Find  $KP$ .



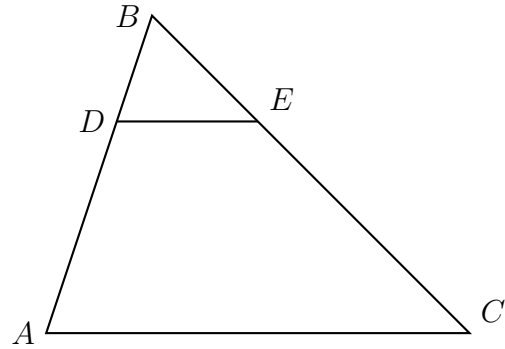
4. In the diagram below, the chords  $\overline{AE}$  and  $\overline{BD}$  intersect at  $C$ . Given  $\triangle ABC \sim \triangle DEC$ ,  $AB = 2$ ,  $DE = 4$ , and  $AC = 3$ . Determine the length of  $\overline{CD}$ .



Name:

5. In the diagram below of  $\triangle ABC$ ,  $D$  is a point on  $\overline{BA}$ ,  $E$  is a point on  $\overline{BC}$ , and  $\overline{DE}$  is drawn.

If  $BD = 5$ ,  $DA = 12$ , and  $BE = 7$ , what is the length of  $\overline{BC}$  so that  $\overline{AC} \parallel \overline{DE}$ ?

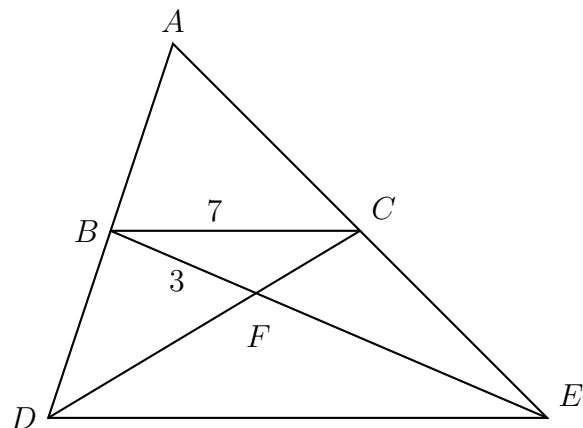


6. Triangle  $ADE$  and its midline  $\overline{BC}$  are drawn, with  $B$  the midpoint of  $\overline{AD}$  and  $C$  the midpoint of  $\overline{AE}$ . The two medians  $\overline{BE}$  and  $\overline{CD}$  are drawn, as shown, intersecting in point  $F$ , the centroid.

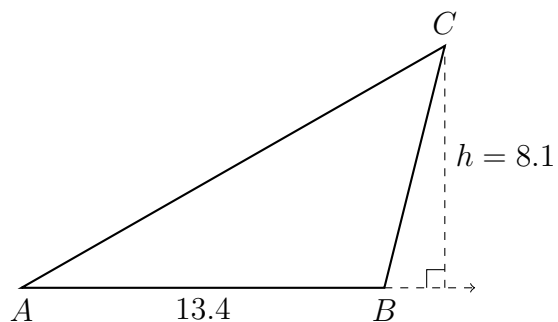
$\triangle FCB \sim \triangle FDE$  with scale factor  $k = 2$ .

Given  $BC = 7$ , find  $DE$ .

Given  $BF = 3$ , find  $FE$ .

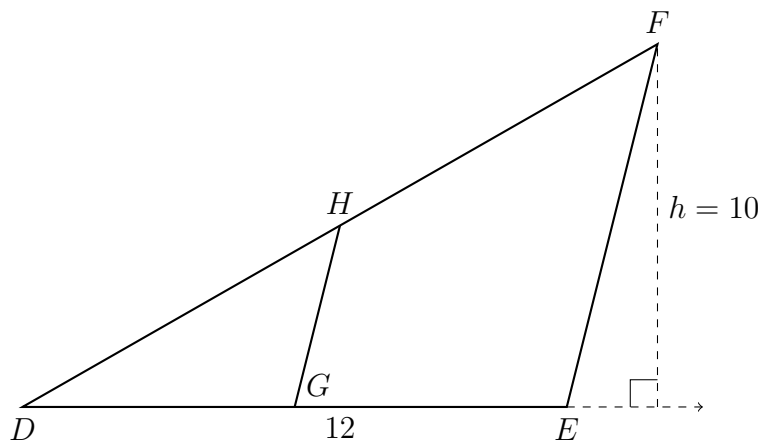


7. The side  $\overline{AB}$  of triangle  $ABC$  is extended and an altitude to the vertex  $C$  is drawn, as shown below. The triangle's height is  $h = 8.1$  and its base measures  $AB = 13.4$ . Find the area of the triangle.



8. Given  $\triangle DEF$  with height  $h = 10$  and base measuring  $DE = 12$ .

(a) Find the area of  $\triangle DEF$ .



- (b) A dilation centered at  $D$  with  $k = 0.5$  maps  $\triangle DEF \rightarrow \triangle DGH$ . Find the base and height of  $\triangle DGH$  and its area.