MA 175 GEOMETRY REVIEW
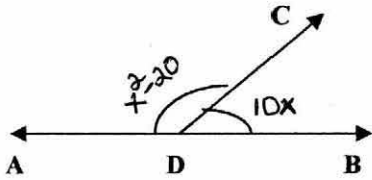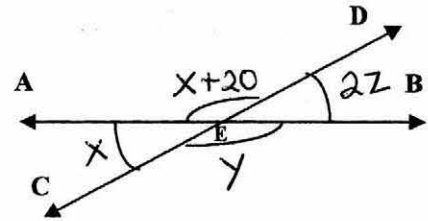
1. **Find each marked angle**
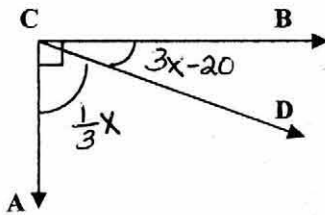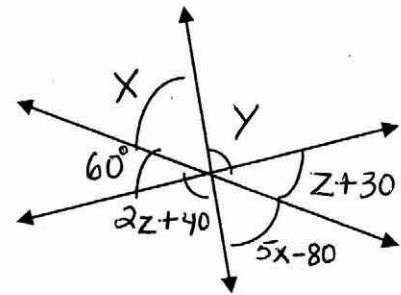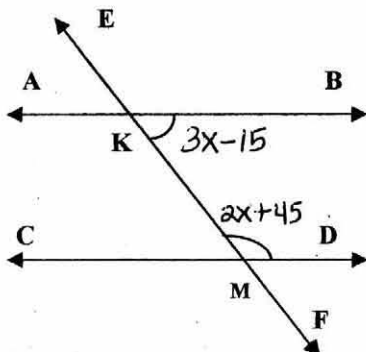
a)
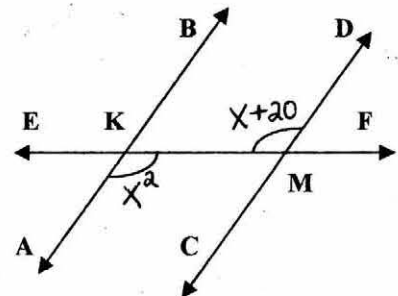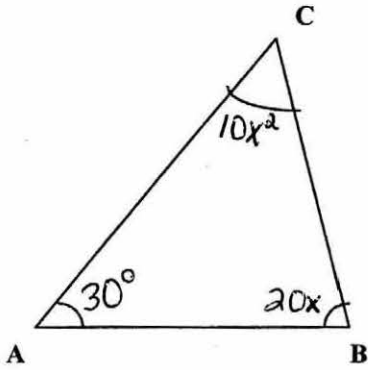

b)

c)

d)

e)

f)

2. **Find x and all the missing angles of each triangle**

a)

C
$10x^2$
$30°$
$20x$
A   B

b)

A
$\frac{x-10}{3}$
$x+10$ $\frac{2x}{5}$
B   C

c)

B
$\frac{5x}{2}$
$4x-10$ $x+10$
D   A   C

d)

C
x z
$42°$ y
A   D   B
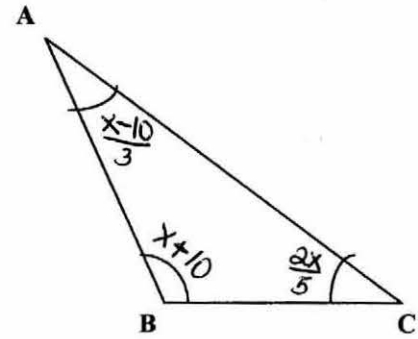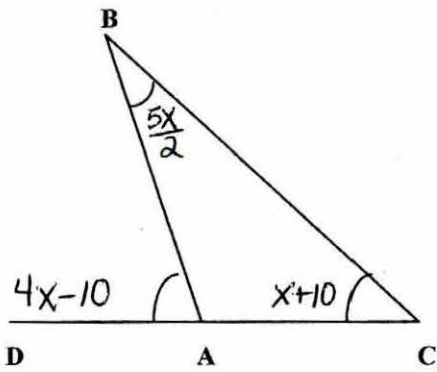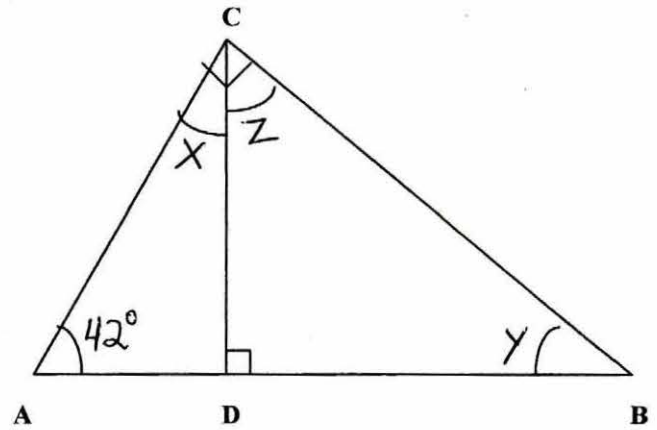
3. **Find AB, if CD is a median**

C
32 $2x^2$
A   D   B
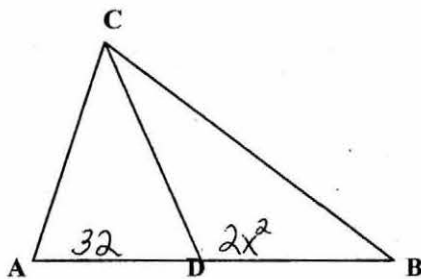
4. **Find ∠ACB, if CD is an angle bisector**

C
$6x^2$
$18x$
A   D   B
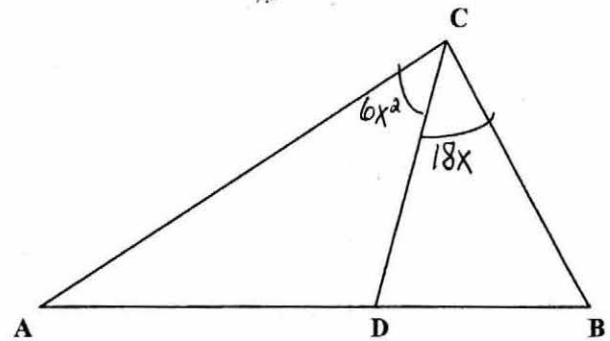
5. Write the congruence statement for each of the following diagrams using the appropriate Theorem. State the corresponding sides and/or angles that are equal. Find x and y.

a)

b)

c)

d)
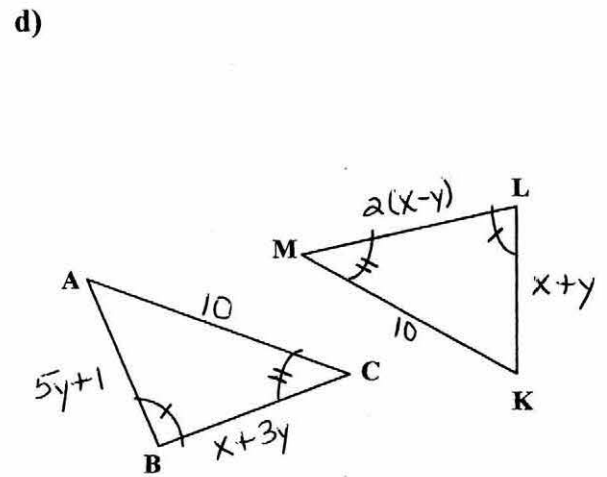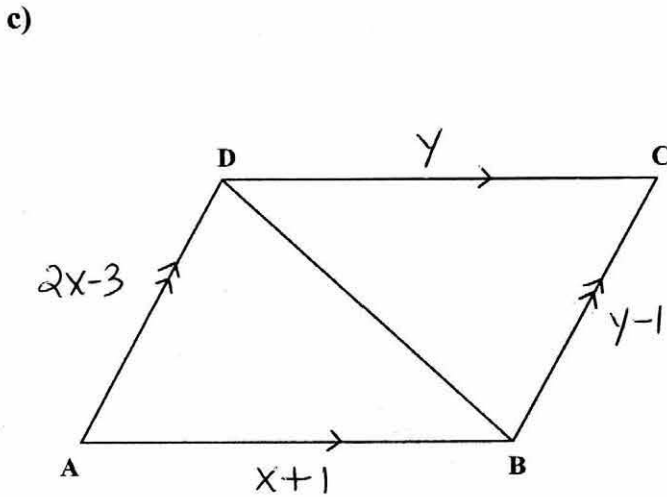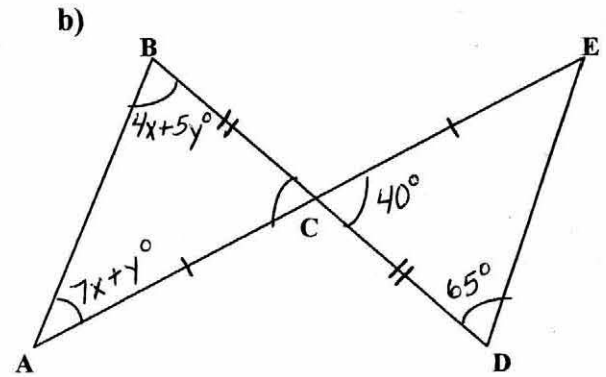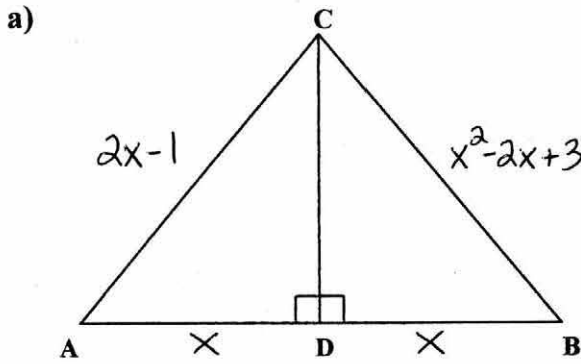
6. Find x and y and all marked sides or angles of the given parallelograms.

a)

b)
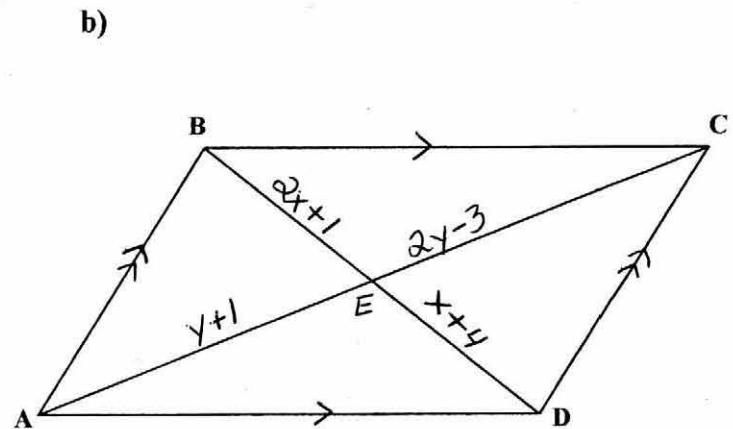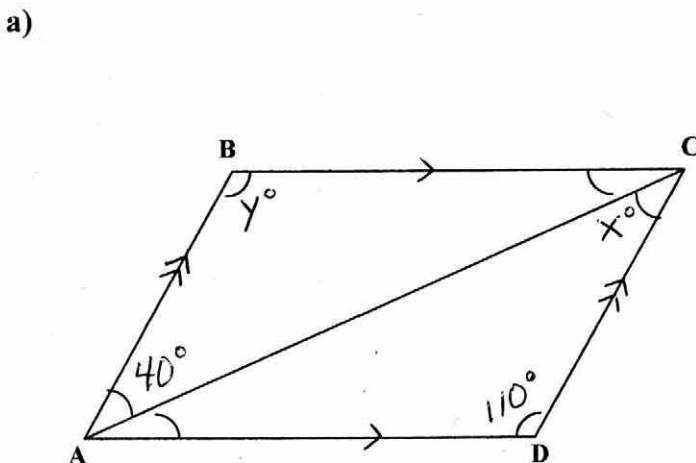
7. For each of the following state the relationship of given triangles. Find x and all marked sides.

a)
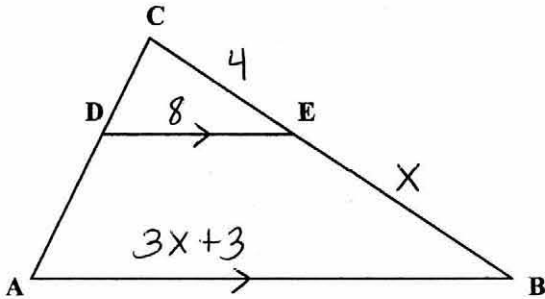
b)
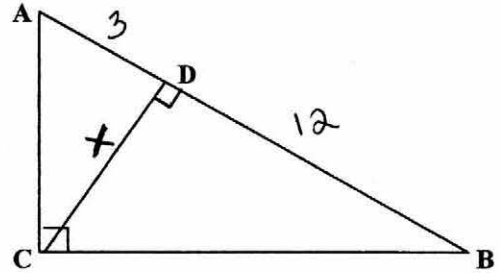
8. For each of the following find x and all marked sides.

a)
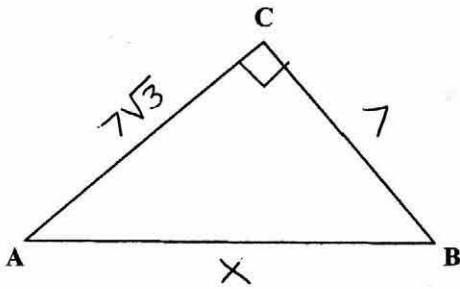
b)
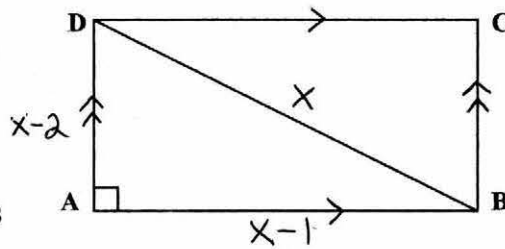
c)
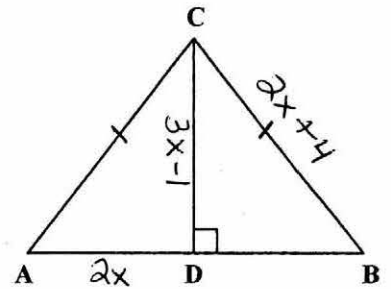
d) Find x, DC and the area of the figure.

e) If AB = 20, find x and the area of the figure.
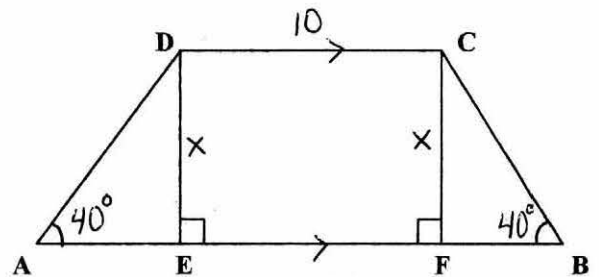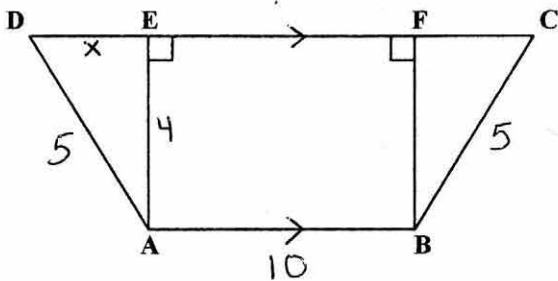
9. For each of the following find x and/or y and the area of the given figures.

a)
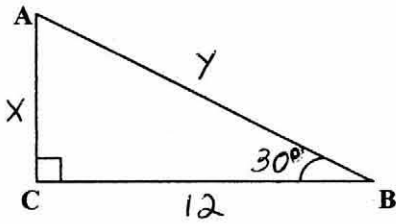
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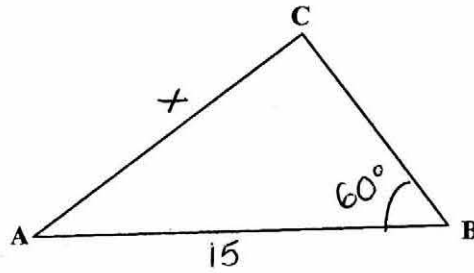
c)
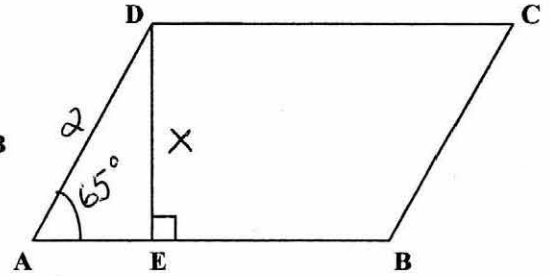
10. At a point 100 feet from a tall building the angle of elevation of the top of the building is 65°. Find the height of the building to the nearest foot.

11. A 20 foot ladder is leaning against a wall. It makes an angle of 70° with the ground. How high is the top of the ladder from the ground (nearest tenth of the foot).

12. For each of the following find the area and perimeter

a)
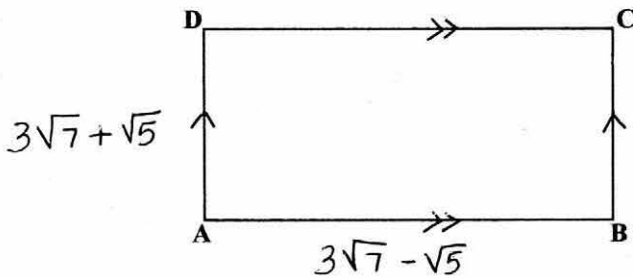
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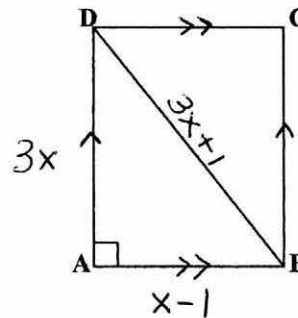
c)
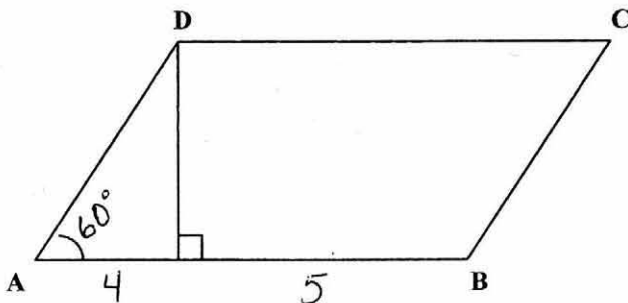
d)
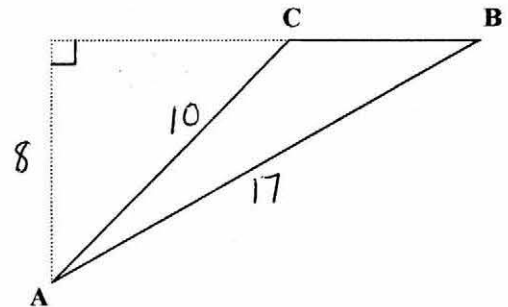
e)
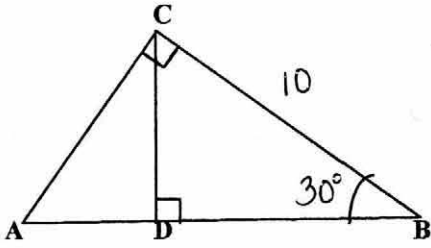
f)
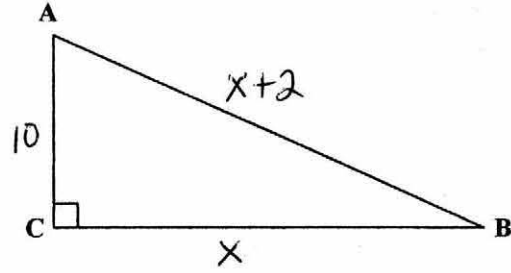
13. Find x if the area of ΔABC is 48 and AB is $3x-2$.

14. Find x if the area of ΔABC is 39.
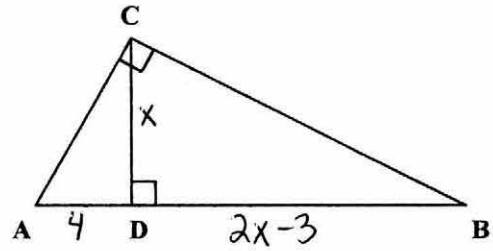
15. Find the area and circumference of each circle.

a)

b)
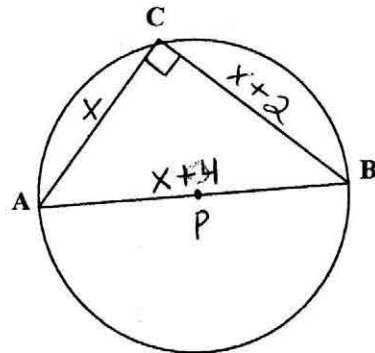
ANSWERS

1. a) $x = 10$, $\angle ADC = 80°$, $\angle CDB = 100°$
   b) $x = 80°$, $y = 100°$, $z = 40°$, $\angle AED = 100°$, $\angle DEB = 80°$
   c) $x = 33°$, $\angle ACD = 11°$, $\angle DCB = 79°$
   d) $x = 20°$, $y = 100°$, $z = 30°$
   e) $x = 30°$, $\angle BKF = 75°$, $\angle DME = 105°$
   f) $x = 5$, $\angle AKF = 25°$, $\angle DME = 25°$

2. a) $x = 3$, $\angle B = 60°$, $\angle C = 90°$
   b) $x = 100$, $\angle A = 30°$, $\angle B = 110°$, $\angle C = 40°$
   c) $x = 40$, $\angle DAB = 150°$, $\angle B = 100°$, $\angle C = 50°$
   d) $x = 48°$, $y = 48°$, $z = 42°$

3. $AB = 64$

4. $\angle ACB = 108°$

5. a)
   $\left.\begin{array}{l} AD = DB \text{ given} \\ \angle ADC = \angle BDC \text{ both equal } 90° \\ CD = CD \text{ identity} \end{array}\right\} \Rightarrow \triangle ADC \cong \triangle BDC \text{ (SAS = SAS)}$

   $x = 2$

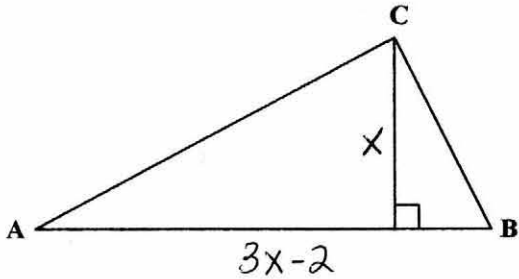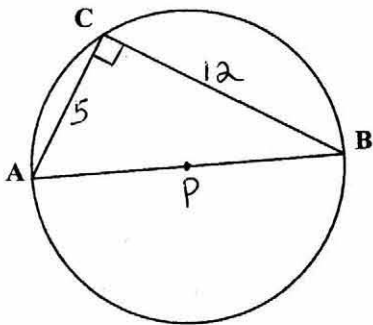   b)
   $\left.\begin{array}{l} BC = CD \text{ given} \\ \angle BCA = \angle DCE \text{ vertical angles are equal} \\ AC = CE \text{ given} \end{array}\right\} \Rightarrow \triangle ABC \cong \triangle EDC \text{ (SAS = SAS)}$

   $x = 10$, $y = 5$

   c)
   $\left.\begin{array}{l} AB = DC \text{ opposite sides of a parallelogram are equal} \\ AD = BC \text{ opposite sides of a parallelogram are equal} \\ DB = DB \text{ identity} \end{array}\right\} \Rightarrow \triangle ADB \cong \triangle CBD \text{ (SSS = SSS)}$

   $x = 3$, $y = 4$

   d)
   $\left.\begin{array}{l} \angle B = \angle L \text{ given} \\ \angle C = \angle M \text{ given} \\ AC = MK \text{ both equal } 10 \end{array}\right\} \Rightarrow \triangle ABC \cong \triangle KLM \text{ (AAS = AAS)}$

   $x = 5$, $y = 1$

6. a) $x = 40°$, $y = 110°$
   b) $x = 3$, $y = 4$, $AE = 5$, $AC = 10$, $BE = 7$, $BD = 14$

7. **a)** $\angle C = \angle C$ identity
$\angle CDE = \angle CAB$ corresponding angles of parallel lines are equal$\left.\vphantom{\begin{array}{c}a\\b\end{array}}\right\}$ $\Rightarrow \triangle CDE \sim \triangle CAB$ (AA = AA)

$x = 5$, $AB = 18$

    b)
$\left.\begin{array}{l}\angle B = \angle B \ \ \text{identity}\\ \angle ACB = \angle CDB \ \ \text{both equal } 90°\\ \triangle ACB \sim \triangle CDB \ (AA = AA)\\ \angle A = \angle A \ \ \text{identity}\\ \angle ACB = \angle ADC \ \ \text{both equal } 90°\\ \triangle ACB \sim \triangle ADC \ (AA = AA)\end{array}\right\}$ $\Rightarrow \triangle ACB \sim \triangle ADC \sim \triangle CDB$

$x = 6$

8. **a)** $x = 14$
    b) $x = 5$, $AD = 3$, $AB = 4$, $DB = 5$
    c) $x = 3$, $AD = 6$, $CD = 8$, $CB = 10$
    d) $x = 3$, $DC = 16$, $A_{ABCD} = 52$ sq. units
    e) $x \approx 4.195$, $A_{ABCD} \approx 62.932$ sq. units

9. **a)** $x = 4\sqrt{3}$, $y = 8\sqrt{3}$, $A_{\triangle ABC} = 24\sqrt{3}$ sq. units
    b) $x = \dfrac{15\sqrt{3}}{2}$, $y = \dfrac{15}{2}$, $A_{\triangle ABC} = \dfrac{225\sqrt{3}}{8}$ sq. units
    c) $x \approx 1.813$, $A_{ABCD} \approx 9.063$ sq. units

10. **214 ft**
11. **18.8 ft**
12. **a)** $P_{ABCD} = 12\sqrt{7}$, $A_{ABCD} = 58$ sq. units
    b) $P_{ABCD} = 62$, $A_{ABCD} = 168$ sq. units
    c) $P_{ABCD} = 34$, $A_{ABCD} = 36\sqrt{3}$ sq. units
    d) $P_{\triangle ABC} = 36$, $A_{\triangle ABC} = 36$ sq. units
    e) $P_{\triangle ABC} = 10 + 10\sqrt{3}$, $A_{\triangle ABC} = \dfrac{50\sqrt{3}}{3}$ sq. units
    f) $P_{\triangle ABC} = 60$, $A_{\triangle ABC} = 120$ sq. units

13. $x = 6$
14. $x = 6$
15. **a)** $C = 13\pi$, $A = 42.25\pi$ sq. units
    b) $C = 10\pi$, $A = 25\pi$ sq. units