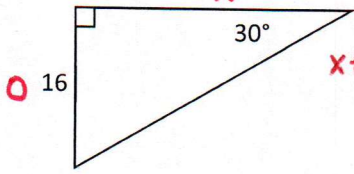


1. Find the value of x.



$$\tan 30 = \frac{16}{x}$$

$$x \tan 30 = 16$$

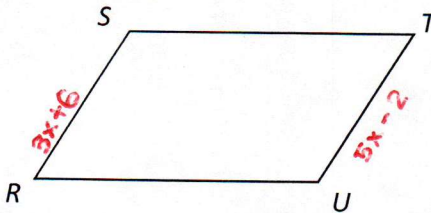
$$x = \frac{16}{\tan 30}$$

$$x = 27.7128$$

2. What is the measure of one exterior angle of a regular octagon? hexagon? decagon?

octagon $\frac{360}{8} = 45^\circ$ hexagon $\frac{360}{6} = 60^\circ$ decagon $\frac{360}{10} = 36^\circ$

3. In parallelogram RSTU, $RS = (3x + 6)$ and $UT = (5x - 2)$. Find the value of x.



$$3x + 6 = 5x - 2$$

$$-3x \quad -3x$$

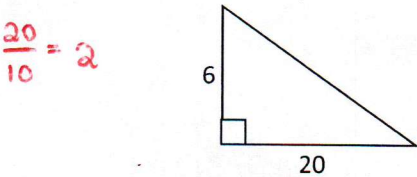
$$6 = 2x - 2$$

$$+2 \quad +2$$

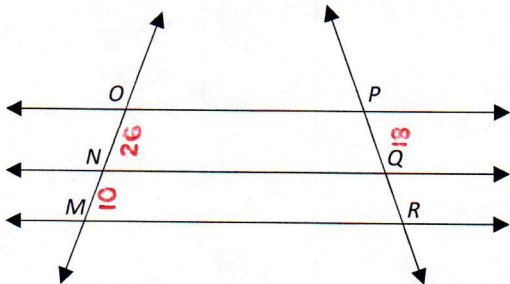
$$8 = 2x$$

$$x = 4$$

4. The triangles below are similar by SAS?



5. In the figure below, $\overline{OP} \parallel \overline{NQ} \parallel \overline{MR}$. Find the length of \overline{PR} , if $MN = 10$, $NO = 26$, and $PQ = 18$.



$$\frac{18}{26} = \frac{x}{36}$$

$$26x = 648$$

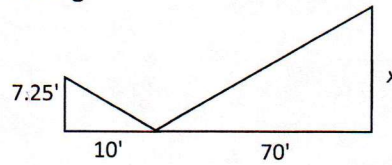
$$x = 24.9231$$

$$\frac{10}{26} = \frac{x}{18}$$

$$180 = 26x$$

$$x = 6.92308$$

6. Bethany positioned herself so that she could see the top of a building in a mirror that she laid on the ground. Based on her diagram, how tall is the building?

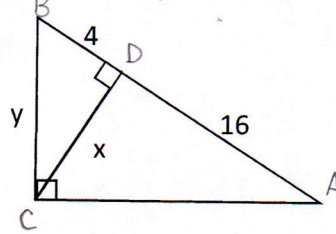


$$\frac{x}{7.25} = \frac{70}{10}$$

$$10x = 507.5$$

$$x = 50.75$$

7. Solve for x and y.



$$CD^2 = AD \cdot BD \quad CB^2 = DB \cdot AB$$

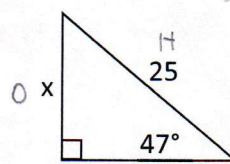
$$x^2 = 16 \cdot 4 \quad y^2 = 4 \cdot 20$$

$$x^2 = 64 \quad y^2 = 80$$

$$x = 8$$

$$y = 8.944$$

8. Solve for x



$$\sin 47 = \frac{x}{25}$$

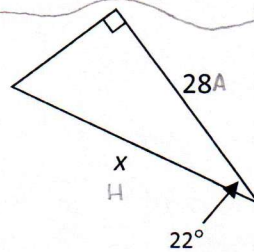
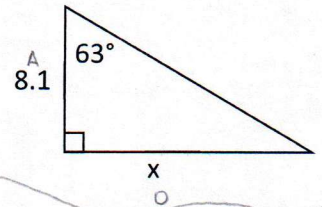
$$x = 25 \sin 47$$

$$x = 18.28$$

$$\tan 63 = \frac{x}{8.1}$$

$$x = 8.1 \tan 63$$

$$x = 15.897$$



$$\cos 22 = \frac{28}{x}$$

$$28 = x \cos 22$$

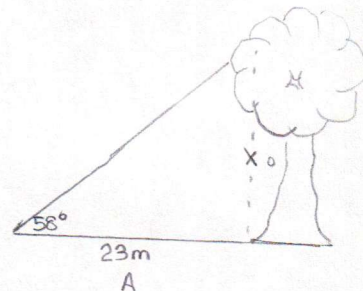
$$x = \frac{28}{\cos 22} = 30.199$$

9. At a point on the ground 23 m from the foot of a tree, the angle of elevation to the top of the tree is 58° . Find the height of the tree.

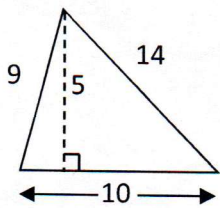
$$\tan 58 = \frac{x}{23}$$

$$x = 23 \tan 58$$

$$x = 36.81$$



10. What is the area of the figure?



$$A = \frac{1}{2}(s)(10)$$

$$= 25$$

11. What is the perimeter of a square whose area is 81 m^2 ? 49 m^2 ?

$$\text{Area} = s^2 = 81 \quad P = 4(s) \quad A = s^2 = 49 \quad P = 4(7)$$

$$s = 9 \quad = 4(9) \quad s = 7 \quad = 28$$

$$= 36$$

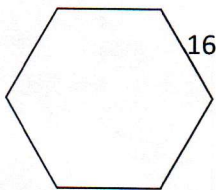
12. What is the circumference of a circle whose diameter is 30 cm?

$$C = \pi \cdot d$$

$$= \pi \cdot 30$$

$$= 30\pi$$

13. What is the area of the regular polygon?



$$A = \frac{3\sqrt{3}}{2} a^2$$

$$= \frac{3\sqrt{3}}{2} 16^2$$

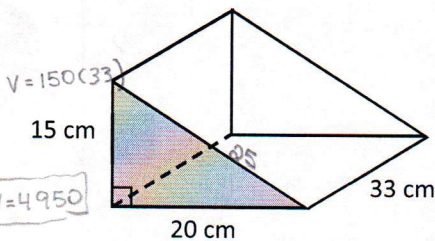
$$= 665.11$$

14. Volume = Bh

$$B = \frac{1}{2}bh$$

$$= \frac{1}{2}(15)(20)$$

$$= 150$$



$$V = 150(33)$$

$$= 4950$$

15. Surface area =

$$Ph + 2B$$

$$(15+20+25)33 + 2(150)$$

$$15^2 + 20^2 = c^2$$

$$c = 25$$

$$S = 1980 + 300$$

$$= 2280$$

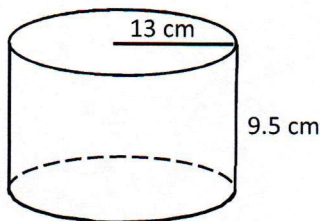
16. Volume =

$$V = Bh$$

$$B = \pi r^2$$

$$= \pi (13)^2$$

$$= 169\pi$$



$$V = 169\pi(9.5)$$

$$= 1605.5\pi$$

$$P = 4(16)$$

$$= 64$$

$$B = 16(16)$$

$$= 256$$

$$8^2 + 15^2 = c^2$$

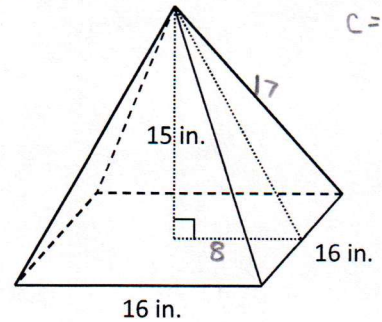
$$c = 17$$

17. Surface area =

$$\frac{1}{2}Pl + B$$

$$\frac{1}{2}(64)(17) + 256$$

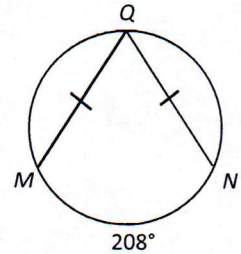
$$S = 800$$



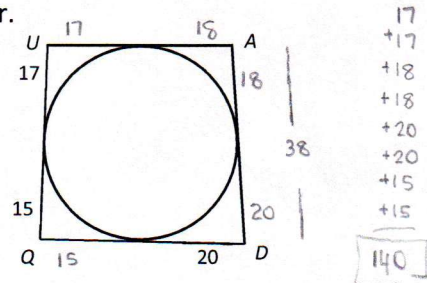
18. Find $m\angle MQN$.

$$m\angle MQN = \frac{1}{2}(208)$$

$$= 104$$



19. QUAD is circumscribed and $AD = 38$. Find the perimeter.



$$17$$

$$+17$$

$$+18$$

$$+18$$

$$+20$$

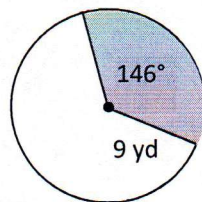
$$+20$$

$$+15$$

$$+15$$

$$= 140$$

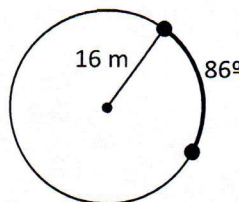
20. What is the area of the sector?



$$A = \frac{N}{360} (\pi r^2)$$

$$= \frac{146}{360} (\pi \cdot 9^2)$$

21. What is the exact length of the arc?



$$A = \frac{N}{360} (2\pi r)$$

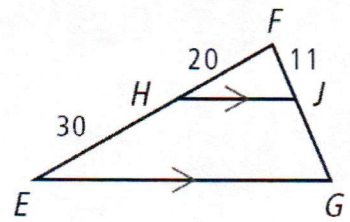
$$= \frac{86}{360} (2\pi \cdot 16)$$

22. Find JG.

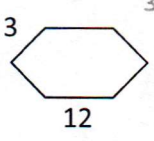
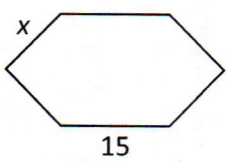
$$\frac{20}{30} = \frac{11}{x}$$

$$20x = 330$$

$$x = 16.5$$



23. If the two polygons below are similar, find the length of the missing side.



$$\frac{x}{3} = \frac{15}{12}$$

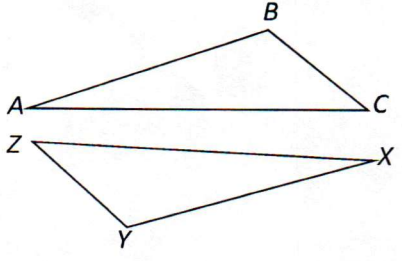
$$12x = 45$$

$$x = 3.75$$

24. What are the 3 methods used to prove triangles are similar?

- A) AA~, SAS~, SSS~
- B) AA~, SAS~, ASA~
- C) ASA~, AAS~, SSS~
- D) HL~, AA~, ASA~

25. In the diagram below, $\triangle ABC \cong \triangle XYZ$. Mark each statement true or false.



- $\angle B \cong \angle Y$ T
- $\angle C \cong \angle Y$ F
- $\angle A \cong \angle X$ T
- $\overline{AC} \cong \overline{YZ}$ F
- $\overline{ZY} \cong \overline{CB}$ T
- $\overline{CB} \cong \overline{XZ}$ T

26. What does CPCTC stand for? When is it used?

Corresponding parts of congruent triangles are congruent.

Used at the end of a proof to show congruence

27. If $\triangle PQR \cong \triangle XYZ$, $PQ = 5a + 8$, and $XY = 7a - 14$. Find a and PQ .

$$5a + 8 = 7a - 14$$

$$-5a \quad -5a$$

$$8 = 2a - 14$$

$$+14 \quad +14$$

$$22 = 2a$$

$$a = 11$$

$$PQ = 5a + 8$$

$$= 5(11) + 8$$

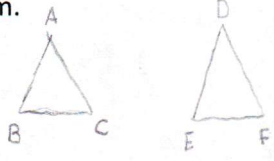
$$= 55 + 8$$

$$= 63$$

28. Select the theorem that can be used to prove the triangles congruent. Your choices are SSS, SAS, ASA, AAS, or HL

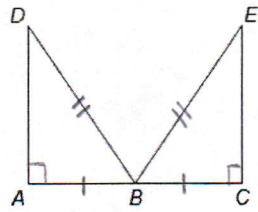
29. Which answer choice below gives enough information to prove that $\triangle ABC \cong \triangle DEF$ using the Angle-Angle-Side (AAS) Congruence Theorem.

- $\overline{AC} \cong \overline{DF}$, $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$
- $\overline{AB} \cong \overline{DE}$, $\angle A \cong \angle D$, $\overline{AC} \cong \overline{DF}$
- $\angle A \cong \angle D$, $\angle C \cong \angle F$, $\overline{AC} \cong \overline{DE}$
- $\angle A \cong \angle B$, $\angle B \cong \angle E$, $\overline{BC} \cong \overline{EF}$



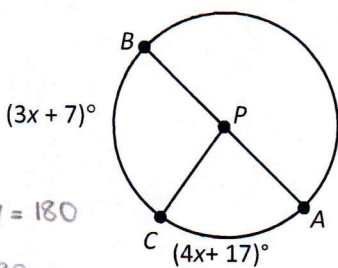
None of these

30. In the diagram below, B is the midpoint of \overline{AC} , $\overline{DA} \perp \overline{AC}$, $\overline{EC} \perp \overline{AC}$, and $\overline{DB} \cong \overline{EB}$. Which theorem may be used to prove $\triangle DAB \cong \triangle ECB$?



HL

31. Given that \overline{BA} is a diameter, find $m\angle CA$.



$$3x + 7 + 4x + 17 = 180$$

$$7x + 24 = 180$$

$$-24 \quad -24$$

$$7x = 156$$

$$x = 22.29$$

32. What is the equation for a circle with a center at $(0, 0)$ and radius = 9?

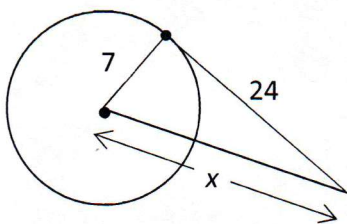
$$x^2 + y^2 = 81$$

33. What is the center and radius of the circle with equation $(x+3)^2 + (y-7)^2 = 36$?

center $(-3, 7)$

radius $\sqrt{36} = 6$

34. Solve for x .



$$7^2 + 24^2 = x^2$$

$$49 + 576 = x^2$$

$$625 = x^2$$

$$x = 25$$