Pre-AP Geometry

Cumulative Review

Name: Key

Teacher -- Period: _____

Chapter 1:

1. Determine the distance between the points (5, 12) and (-1, 6).

$d = \sqrt{(5+1)^2 + (12-6)^2}$

$= \sqrt{36+36}$

$= \sqrt{72} \approx 8.49$

2. Calculate the midpoint of a line segment with endpoints (-2, -1) and (6, 3)

$\frac{6 - -2}{2} = 2$

$\frac{3 - -1}{2} = 2$ $(2, 2)$

3. Write the equation of a line that passes through A(-1, 7) and B(5, -10).

$y - y_1 = m(x - x_1)$

$y - 7 = \frac{-17}{6}(x+1)$

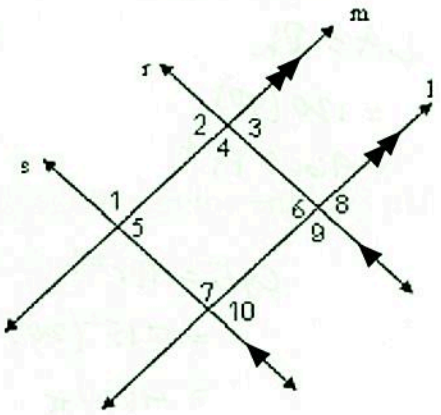
$y = -\frac{17}{6}x + \frac{25}{6}$

4. Determine if $\overleftrightarrow{AB}$ from problem #3 is parallel, perpendicular, or neither to a line that passes through C(2, 9) and D(6, -12).

$\frac{\text{rise}}{\text{run}} = \frac{-17}{4}$ neither

5. $\overline{JK}$ has endpoints (3, 7) and (4, -3). If $\overline{JK}$ is translated 12 units down and 7 units to the left, what are the endpoints of $\overline{J'K'}$?

$(-4, -5)$ $(-3, -15)$



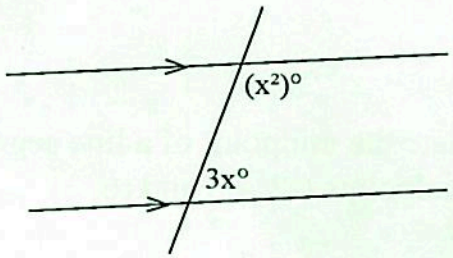
Chapter 2:

6. Use the diagram above to match the correct statements ~~to~~

a. $\angle 1$ *and* $\angle 7$ are $\cong$ because they are P
b. $\angle 6$ *and* $\angle 10$ are M and $\cong$
c. *Line m* is || to K
d. $\angle 2$ *and* Q are alternate exterior $\angle's$
e. $\angle 1$ *and* O are same-side exterior $\angle's$
f. *Line r* is || to R
g. Same-side interior $\angle's$ are N
h. Corresponding $\angle's$ are L.
i. $\angle 2$ *and* $\angle 3$ are $\cong$ because they are J

~~j~~. vertical $\angle's$
~~K~~. *Line l*
~~L~~. congruent
~~M~~. alternate interior $\angle's$
~~N~~. supplementary
~~O~~. $\angle 10$
~~P~~. corresponding $\angle's$
~~Q~~. $\angle 8$
~~R~~. *Line s*

7. Find the values of x.



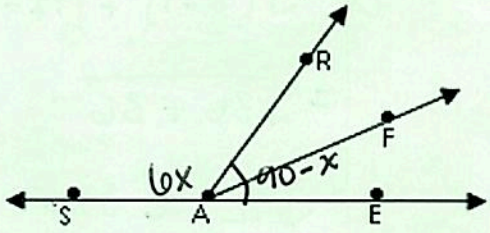
$x^2 + 3x = 180$

$x^2 + 3x - 180 = 0$

$(x+15)(x-12)$

$x = -15 \quad x = 12$

8. $\overrightarrow{AF}$ bisects $\angle RAE, m\angle SAR = 6x, m\angle RAE = 90 - x$.
Find the value of x.



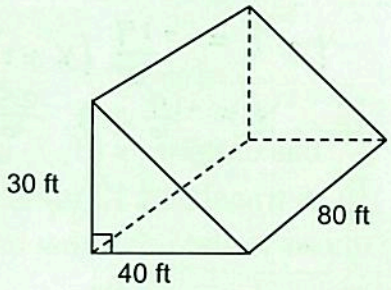
$6x + 90 - x = 180$

$5x = 90$

$x = 18$

Chapters 3-4:

9. Find the lateral surface area and total surface area of the triangular prism.



$LA = Ph$

$= 120(80)$

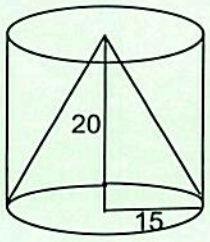
$= 9600\ ft^2$

$S = Ph + 2B$

$= 9600 + 2(600)$

$= 10800\ ft^2$

10. Find the volume of the remaining figure when the cone is removed from the cylinder.



$Cyl. = \pi r^2 h$

$= \pi 15^2(20)$

$= 4500\pi$

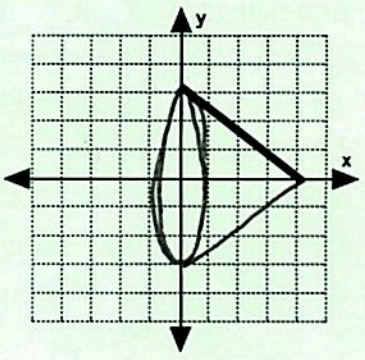
$cone = \frac{1}{3}Bh$

$= \frac{1}{3}(15^2\pi)(20)$

$= 1500\pi$

3000π

11. What shape is created when you rotate the right triangle shown 360° about the x-axis, what is the volume of the resulting shape in terms of π?



cone

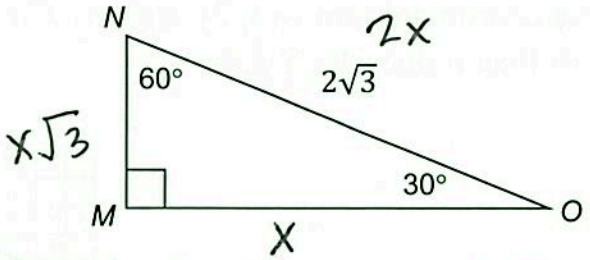
$V = \frac{1}{3}Bh$

$= \frac{1}{3}(3^2\pi)(4)$

$= 12\pi$

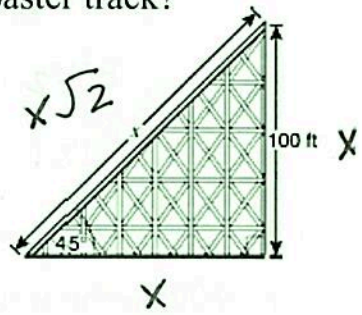
Chapters 5-8:

12. MO = $\sqrt{3}$



13. Matt wants to design the first section of a roller coaster track. He wants the ramp section to rise at 45° with the horizontal and connect at the top of a segment 100 feet high. Find x, the length of the ramp that Matt needs to complete his section of the coaster track?

$100\sqrt{2}$

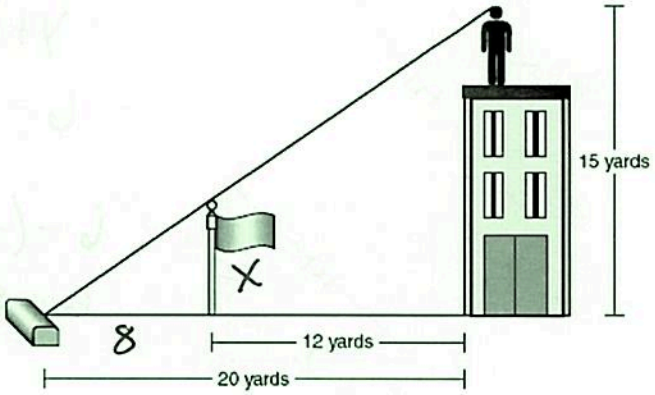


14. Carla looks down from a height of 15 yards at the top of her apartment building. She lines up the top of a flagpole with the curb of a street 20 yards away. If the flagpole is 12 yards from the apartment building, how tall is the flagpole?

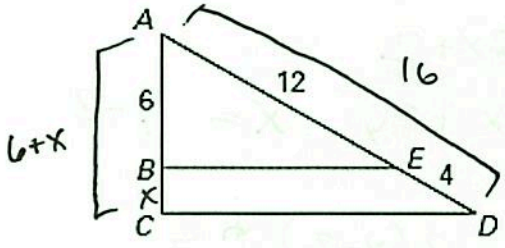
$\frac{15}{20} = \frac{x}{8}$

$15(8) = 20x$

$x = 6$ yd.



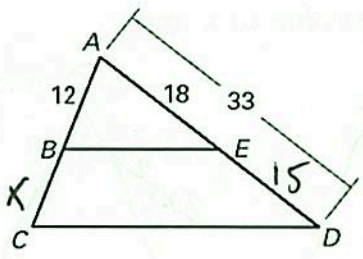
15. Given $\Delta ABE \sim \Delta ACD$, find BC.



$\frac{6}{6+x} = \frac{12}{16}$

$6(16) = 12(6+x)$ $x = 2$

16. Given $\Delta ABE \sim \Delta ACD$, find BC.



$\frac{12}{x} = \frac{18}{15}$

$12(15) = 18x$

$x = 10$

17. Rotate ΔABC whose coordinates are A(3, 2), B(3, 6), C(6, 1) 90° counterclockwise about the origin and then Reflect it over the Y axis.

A'(-6, 3)

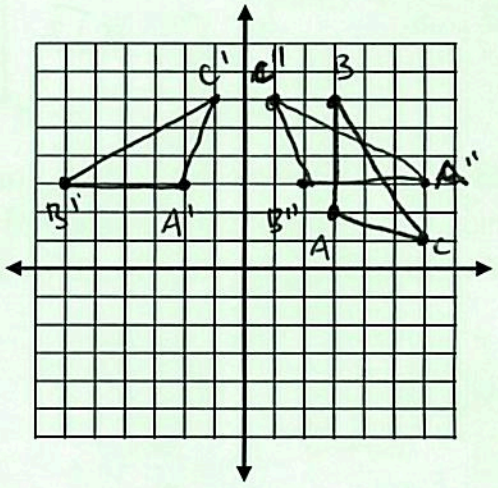
B'(-2, 3)

C'(-1, 6)

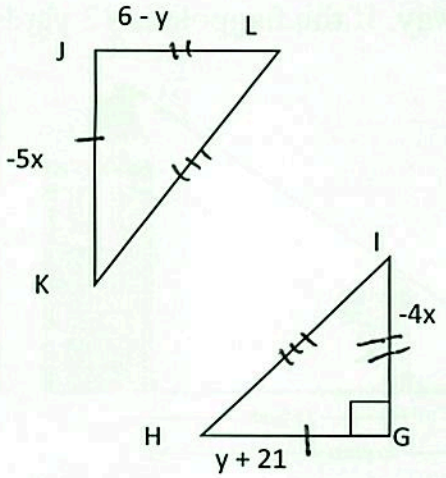
A''(6, 3)

B''(2, 3)

C''(1, 6)



18. What is the length of $\overline{GH}$, if $\Delta GHI \cong \Delta JKL$?



$y + 21 = -5x$ $\quad y = -5x - 21$

$6 - y = -4x$

$6 - (-5x - 21) = -4x$

$6 + 5x + 21 = -4x$

$x = -3$

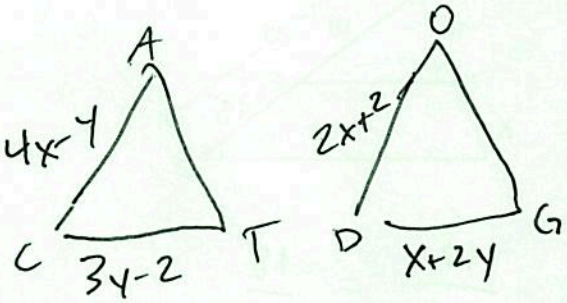
$y = -5(-3) - 21$

$y = -6$

$GH = -6 + 21$

$GH = 15$

19. If △ CAT ≅ △ DOG, CA = 4x – y, CT = 3y – 2, DO = 2x + 2 and DG = x + 2y, find the value of x and y.



$4x - y = 2x + 2$

$3y - 2 = x + 2y$ $\quad x = y - 2$

$4(y-2) - y = 2(y-2) + 2$

$4y - 8 - y = 2y - 4 + 2$

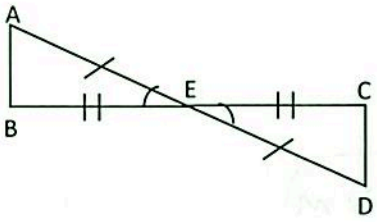
$y = 6$

$x = 6 - 2$

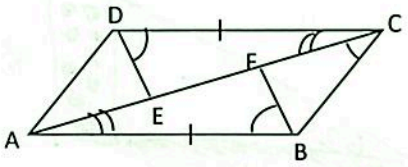
$x = 4$

#20-27. For each pair of triangles, tell which postulate, if any, can be used to prove the triangles congruent. (ASA, AAS, SSS, SAS, HL)

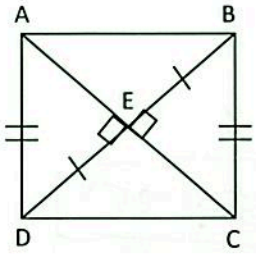
20. $\Delta AEB \cong \Delta DEC$ SAS



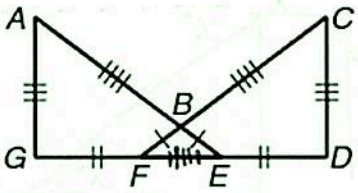
21. $\Delta CDE \cong \Delta ABF$ ASA



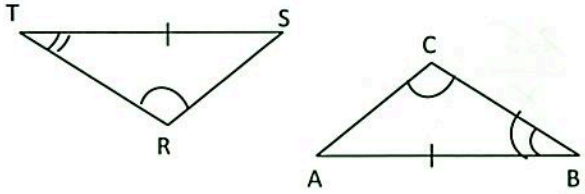
22. $\Delta DEA \cong \Delta BEC$ HL



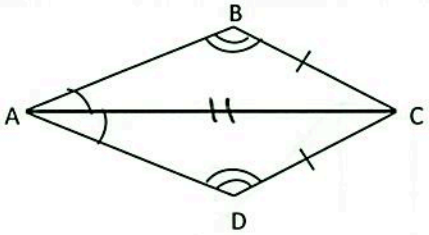
23. $\Delta AGE \cong \Delta CDF$ SSS



24. $\Delta RTS \cong \Delta CBA$ AAS

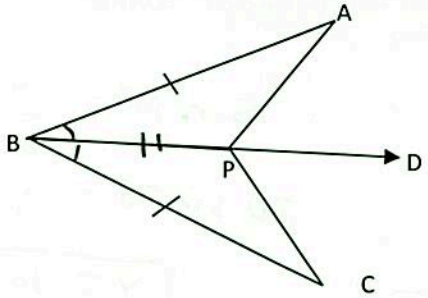


25. $\Delta ABC \cong \Delta ADC$ AAS

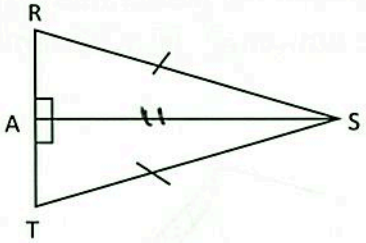


26. $\Delta BAP \cong \Delta BCP$ SAS

Given: $\overrightarrow{BD}$ bisects $\angle ABC$

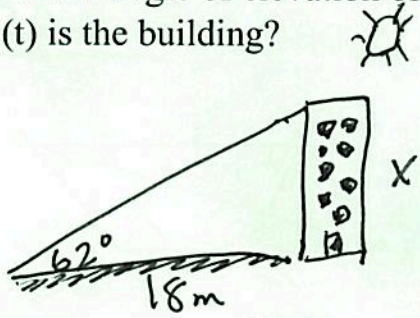


27. $\Delta SAT \cong \Delta SAR$ HL



Chapter 9:

28. When the angle of elevation of the sun is 62°, a building casts a shadow 18 m long. How tall (t) is the building?

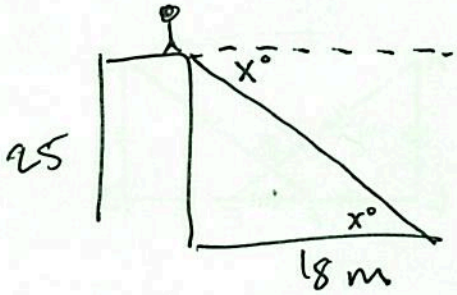


$\tan 62 = \frac{x}{18}$

$18 \tan 62 = x$

$x = 33.85\text{ m}$

29. Fred is standing on a 25m tower and sees a snake on the ground 18 m from the base of the tower, what is the angle of depression (d) from Fred to the snake?

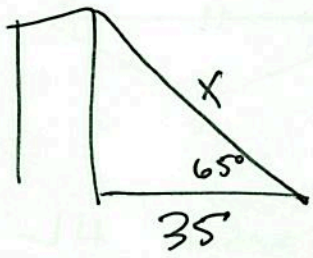


$\tan x = \frac{25}{18}$

$\tan^{-1}\left(\frac{25}{18}\right) = x$

$x = 54.25°$

30. A wire is attached from the top of a tower to a point on the ground. The base of the tower is 35 m from the end of the wire on the ground. If the wire makes a 65° angle with the ground, how long is the wire (w)?

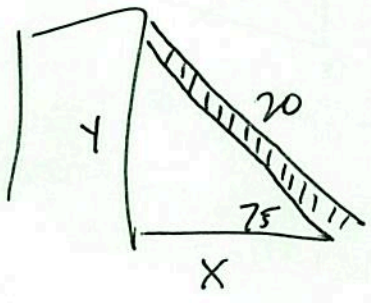


$\cos 65 = \frac{35}{x}$

$x = \frac{35}{\cos 65}$

$x = 82.82\text{ m}$

31. A ladder that is 20 ft. long is leaning against the side of a building. If the angle formed between the ladder and ground is 75°, how far is the bottom of the ladder from the base of the building? How far up the building will it reach?



$\cos 75 = \frac{x}{20}$

$20 \cos 75 = x$

$x = 5.18\text{ ft}$

$\sin 75 = \frac{y}{20}$

$20 \sin 75 = y$

$y = 19.32\text{ ft}$

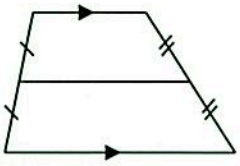
Chapter 10:

Review Quadrilateral Flipbook from Chapter 10 to know the properties of the different parallelograms (parallelogram, rhombus, square, rectangle).

	Opp. Sides ||	Opp. Sides ≅	All Sides ≅	Opp. Angles ≅	All Angles ≅
Parallelogram	X	X		X	
Rhombus	X	X	X	X	
Square	X	X	X	X	X
Rectangle	X	X		X	X
	Diagonals bisect each other	Diagonals ⊥	Diagonals ≅	Diagonals bisect ∠'s	Consecutive ∠'s supp.
Parallelogram	X				X
Rhombus	X	X		X	X
Square	X	X	X	X	X
Rectangle	X		X		X

** Also review Quadrilateral Flipbook from Chapter 10 to know the properties of kites and trapezoids.**

Trapezoid Midsegment Theorem: The midsegment of a trapezoid is parallel to each of the bases and its length is one half the sum of the bases (average measure of bases).



Chapter 14-15:

Geometric Probability

32. What is the probability that a randomly selected point is in the shaded region?

$$\frac{\text{favorable}}{\text{total}} = \frac{\text{shaded area}}{\text{total area}} = \frac{\square - \Delta - \bigcirc}{\square}$$

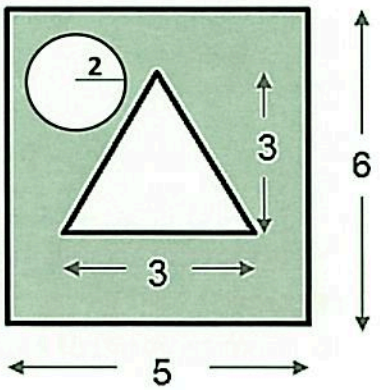
$\square = 30$

$\Delta = 4.5$

$\bigcirc = 4\pi$

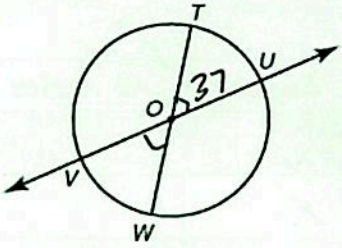
$$\frac{30 - 4.5 - 4\pi}{30} = .4311$$

43.11 %



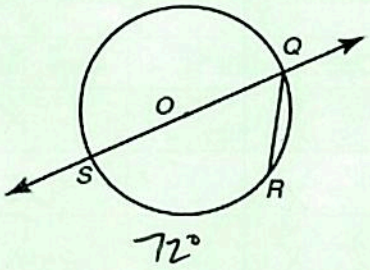
Chapters 11-13:

33. ∠TOU = 37°, what is m $\overset{\frown}{VW}$?



37°

34. m $\overset{\frown}{SR}$ = 72°, what is m∠SQR?

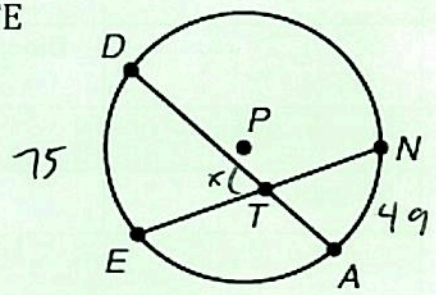


72°

36°

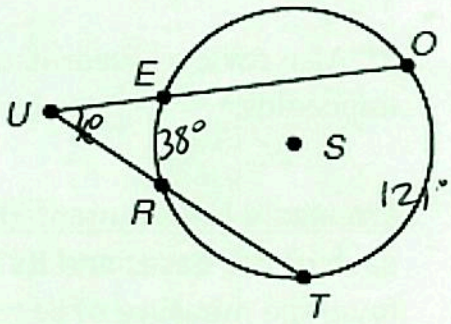
35. In circle P, m $\overset{\frown}{DE}$ = 75°, and m $\overset{\frown}{NA}$ = 49°, determine m∠DTE

$\frac{75 + 49}{2} = x$ $\quad \frac{124}{2} = \boxed{62°}$



36. In circle S, m $\overset{\frown}{ER}$ = 38°, and m $\overset{\frown}{OT}$ = 121°, determine m∠OUT

$\frac{121 - 38}{2} = x$ $\quad \frac{83}{2} = \boxed{41.5°}$



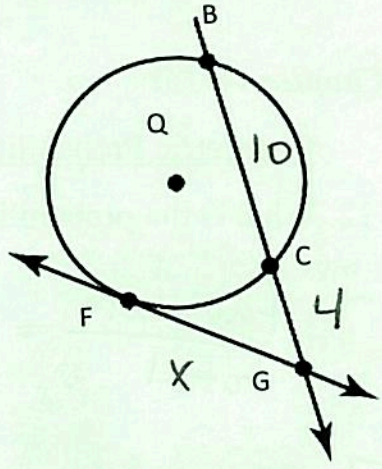
37. In the figure shown, line *FG* is tangent to circle *Q*, *BC* = 10 feet, and *CG* = 4 feet. What is *FG*?

whole · ext = tangent²

$14(4) = x^2$

$56 = x^2$

$x = \sqrt{56} \approx 7.48$ ft.



****Review material from <u>Chapters 12-13</u> such as arc length, sector and segment area, standard and general form of the equation of a circle, and completing the square in order to rewrite general form to standard form. ****