Name Key Per. _____

Geometry Due Date: _____

Geometry Final Review (Spring)

This review must be turned in the day of your final exam. I will not accept any reviews that are turned in late.

1 If $\frac{2}{x-4} = \frac{3}{x}$, then $x = 12$.

$2x = 3(x-4)$ $x = 12$

$2x = 3x - 12$

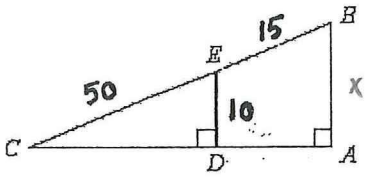
$-x = -12$

2 The geometric mean of 6 and 30 is $6\sqrt{5}$.

$x = \sqrt{6(30)} = \sqrt{180}$ $x = 6\sqrt{5}$

$2^2 \cdot 90$, $2^2 \cdot 45$, $3^2 \cdot 15$, $3^2 \cdot 5$

3 Given that $\frac{ED}{BA} = \frac{EC}{BC}$, find AB to the nearest tenth. The figure is not drawn to scale. AB = 13



$\frac{10}{x} = \frac{50}{65}$

$50x = 650$

$x = 13$

4 The perimeter of a rectangle is 52. The ratio of the lengths of the sides is 6 : 7. What are the lengths of the sides? 12 and 14

$P = 2l + 2w$ $6(2) = 12$ $7(2) = 14$

$52 = 2(6x) + 2(7x)$

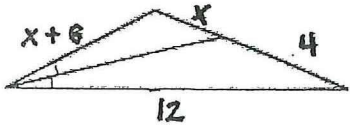
$52 = 12x + 14x$

$52 = 26x$

$x = 2$

5 If two polygons are SIMILAR, then the corresponding sides must be proportional

6 What is the value of x in the figure shown?



$x = 3$

$\frac{x}{x+6} = \frac{4}{12}$

$12x = 4(x+6)$

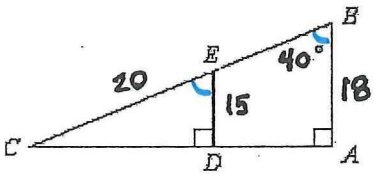
$12x = 4x + 24$

$8x = 24$

$x = 3$

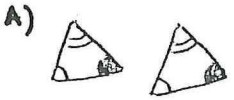
7 If two polygons are SIMILAR, then the corresponding angles must be congruent

8 Use the figure to find $m\angle CED$. The figure is not drawn to scale. $m\angle CED = 40°$



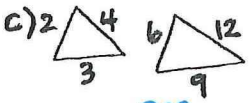
9 The postulate or theorem that can be used to prove that the two triangles are similar is _____.

A) Reason AA



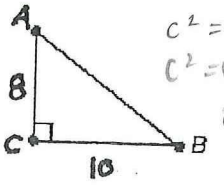
B) Reason SAS

C) Reason SSS



D) Reason AA

10 ΔABC is a right triangle. $AB = 2\sqrt{41}$



$c^2 = 8^2 + 10^2$

$c^2 = 64 + 100$

$c^2 = \sqrt{164}$

$2^2 \cdot 82$, $2^2 \cdot 41$

* 11 If the side lengths of a triangle are 5, 7, and 12, the triangle is obtuse

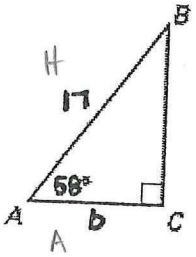
clarify instructions

12^2 | 7 | $5^2 + 8^2$ (8)

144 $25 + 64$

89

12 Find the value of b in ΔABC. Round to the nearest tenth. $b = 9$



$\cos(58) = \frac{b}{17}$

$b = 17(\cos(58))$

$b = 9$

13 Find the value of x.

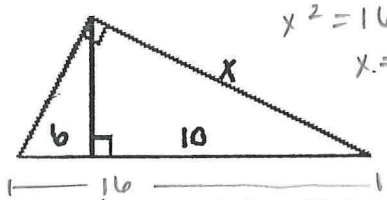
$x = 4\sqrt{10}$

$x^2 = 10(16)$

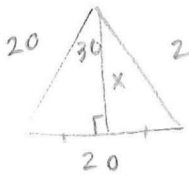
$x^2 = 160$

$x = \sqrt{160}$

$160 = 2^5 \cdot 5$



14 An equilateral triangle has side lengths of **20**. The length of its altitude is $10\sqrt{3}$.



$20^2 = x^2 + 10^2$

$400 = x^2 + 100$

$x^2 = 300$

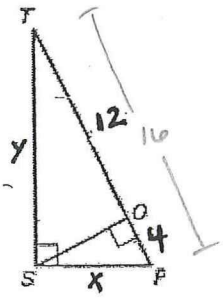
$x = \sqrt{300}$

$\sqrt{300} = 3 \cdot 100$

$x = 10\sqrt{3}$

15 Use the diagram to find the values of x and y.

$x = 8,\ y = 8\sqrt{3}$



$x^2 = 4(16)$

$x^2 = 64$

$x = 8$

$y^2 = 12(16)$

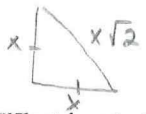
$y^2 = 192$

$y = \sqrt{192}$

$192 = 2^6 \cdot 3$

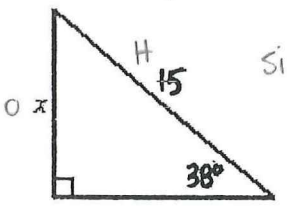
$y = 8\sqrt{3}$

16 In a 45°-45°-90° triangle, the ratio of the length of the hypotenuse to the length of a side is $\sqrt{2}:1$



$\frac{x\sqrt{2}}{x} = \frac{\sqrt{2}}{1}$

17 What is x to the nearest hundredth? (not drawn to scale) $x = 9.23$

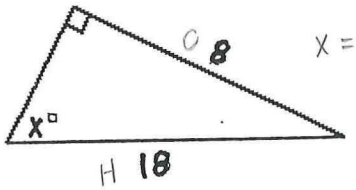


$\sin(38) = \frac{x}{15}$

$x = 15(\sin(38.1))$

$x = 9.23$

18 Solve for x to the nearest degree. $x = 26°$



$x = \sin^{-1}\left(\frac{8}{18}\right)$

$x = 26.3$

$x = 26°$

19 A regular polygon has an interior angle with a measure of **150°**. How many sides does the polygon have? $n = 12$

$180 - 150 = 30$

$Ext\angle = 30$

$30 = \frac{360}{n}$

$30n = 360$

$n = 12$

20 The measure of each exterior angle of a regular **decagon** is $36°$.

$n = 10$

$ext\angle = \frac{360}{10}$

$= 36°$

21 What is the sum of the exterior angles in a convex 13-sided polygon? $360°$

22 The measure of each interior angle of a regular **pentagon** is $108°$.

$n = 5$

$each\ int.\ \angle = \frac{(5-2)180}{5}$

$= 108°$

23 The sum of the measures of the interior angles of a convex **heptagon** is $900°$.

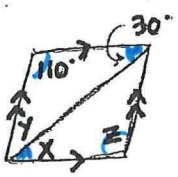
$n = 7$

$sum\ int\ \angle = (7-2)180$

$= 900°$

24 Find the value of the variables in the parallelogram.

$x = 30°,\ y = 40°,\ z = 110°$



$x = 30$

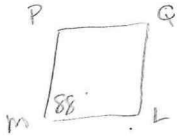
$z = 110°$

$y + 30 + 110 = 180$

$y + 140 = 180$

$y = 40$

25 For parallelogram $PQLM$ below, if $m\angle PML = 88°$, then $m\angle PQL =$ $88°$. *Hint: Draw the //-gram.



26 Consecutive angles in a parallelogram are always **supplementary**

27 Choose the statement that is NOT ALWAYS true. For any parallelogram _____.

A) opp $\angle$s $\cong$ C) opp. sides $\cong$

B) All are true. D) diagonals are $\perp$

28 Which statement is true?

A) All rectangles are squares. C) All //-grams are quadrilaterals

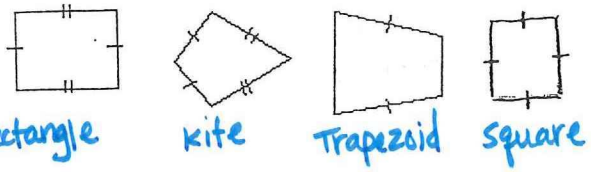
B) All //-grams are quadrilaterals; quadrilaterals are //-grams D) All are true.

29 Choose the statement that is NOT ALWAYS true. For a rhombus _____.

A) All 4 sides $\cong$ C) All are true

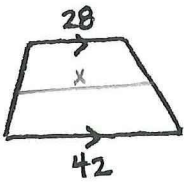
B) each diagonal bisects a pair of opposite $\angle$s D) diagonals are $\cong$

30 Choose the figure below which satisfies the definition of a kite, trapezoid, rectangle, and square.



Rectangle kite Trapezoid square

31 For the trapezoid shown below, the measure of the midsegment is 35.

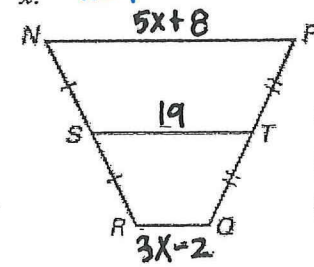


$x = \frac{28+42}{2}$

$x = \frac{70}{2}$

$x = 35$

32 $NPQR$ is a trapezoid and $ST = 19$. Find the value of x. $x = 4$



$19 = \frac{5x+8+3x-2}{2}$

$38 = 5x+8+3x-2$

$38 = 8x+6$

$32 = 8x$

$x = 4$

33 If all four sides of a quadrilateral are congruent, the quadrilateral is a rhombus

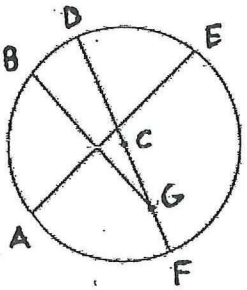
34 A segment with endpoints on a circle is a chord

35 If a circle has a diameter of 14, then it has a radius of 7.

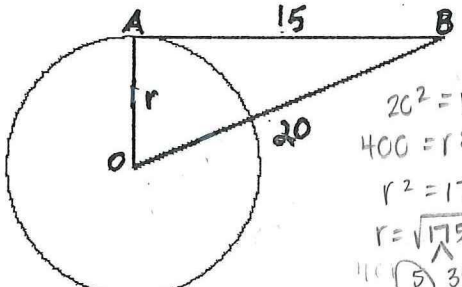
36 Identify two chords.

$\overline{AE}$

$\overline{FD}$



37 You are standing at point B. Point B is 20 feet from the center of the circular water storage tank and 15 feet from point A. $\overline{AB}$ is tangent to $\odot O$ at A. Find the radius of the tank. $r = 5\sqrt{7}$ or 13.2



$20^2 = r^2 + 15^2$

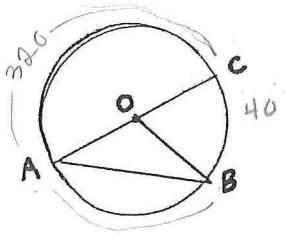
$400 = r^2 + 225$

$r^2 = 175$

$r = \sqrt{175}$

$5\sqrt{7}$

38 Given: In $\odot O$, $m\overset{\frown}{BAC} = 320°$. Find $m\angle A$. $m\angle A = 20°$



$m\overset{\frown}{BC} = 360 - 320 = 40°$

$m\angle A = \frac{40}{2}$

$m\angle A = 20°$

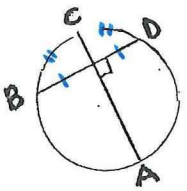
39 A wooden wagon wheel has 6 equally spaced spokes radiating from the central hub.

What is the measure of the angle that determines the separation between two adjacent spoke holes? 60°

* Draw a picture.

$\frac{360}{6} = 60°$

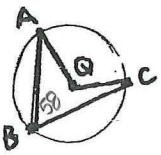
40 Given $\overline{AC}$ bisects $\overline{BD}$, choose the true statement that refers to the figure.



A) $\overset{\frown}{BCD}$ is a major arc. C) $\overline{AC}$ is a diameter

B) $\overset{\frown}{BAD}$ is a minor arc. D) None.

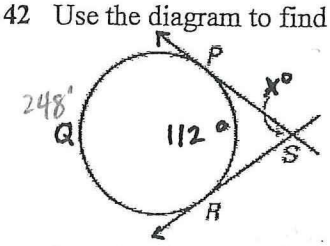
41 Given $\odot Q$ and $m\angle B = 58°$, find $m\overset{\frown}{AC}$. $m\overset{\frown}{AC} = 116°$



$m\overset{\frown}{AC} = 2(58)$

$= 116°$

42 Use the diagram to find the value of x. $x = 68°$

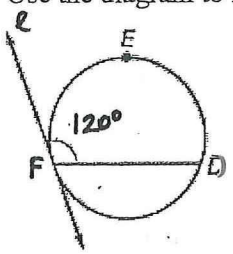


$360 - 112 = 248$

$x = \frac{248-112}{2}$

$x = 68°$

43 Use the diagram to find $m\overset{\frown}{DEF}$. $m\overset{\frown}{DEF} = 240°$



$m\overset{\frown}{DEF} = 2(120)$

$= 240°$

44 Find $m\angle PSQ$ if $m\angle PSQ = 4y-5$ and $m\angle PRQ = 2y+19$. $m\angle PSQ = 43°$

$4y - 5 = 2y + 19$

$2y = 24$

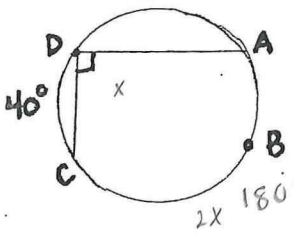
$y = 12$

$PSQ = 4(12) - 5$

$48 - 5$

$= 43°$

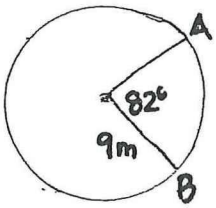
45 Use the diagram to find $m\overset{\frown}{AD}$ $m\overset{\frown}{AD} = 140°$



$m\overset{\frown}{AD} = 360 - (180 + 40)$

$= 140°$

46 What is the length of $\overset{\frown}{AB}$? $\overset{\frown}{AB} = 12.9\text{m}$

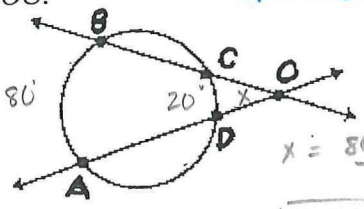


$\frac{x}{2\pi(9)} = \frac{82}{360}$

$360x = 82(18\pi)$

$x = 12.9\text{m}$

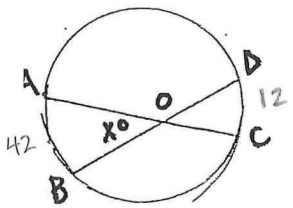
47 $m\overset{\frown}{AB} = 80°$, $m\overset{\frown}{CD} = 20°$
Find $m\angle DOC$. $m\angle DOC = 30°$



$x = \frac{80 - 20}{2}$

$x = 30°$

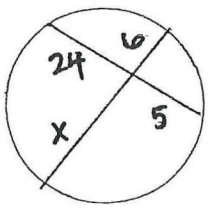
48 Find the value of x if $m\overset{\frown}{AB} = 42°$ and $m\overset{\frown}{CD} = 12°$. $x = 27°$



$x = \frac{42 + 12}{2}$

$x = 27°$

49 Find the value of x. $x = 20$



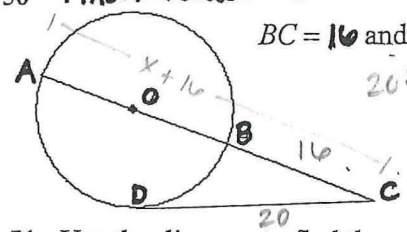
$6x = 24(5)$

$6x = 120$

$x = 20$

50 Find the diameter of the circle. $d = 9$

$BC = 16$ and $DC = 20$.



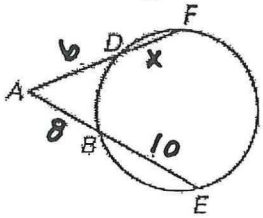
$20^2 = 16(x + 16)$

$400 = 16x + 256$

$16x = 144$

$x = 9$

51 Use the diagram to find the value of x. $x = 18$



$6(x + 6) = 8(18)$

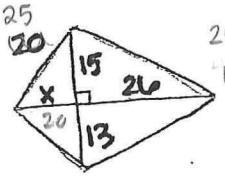
$6x + 36 = 144$

$6x = 108$

$x = 18$

52 Find the area of the quadrilateral. (not drawn to scale) $A = 644\text{u}^2$

Change → 25



$25^2 = x^2 + 15^2$

$625 = x^2 + 225$

$x^2 = 400$

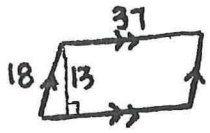
$x = 20$

$d_1 = 15 + 13 = 28$

$d_2 = 20 + 26 = 46$

$A = \frac{28(46)}{2} = 644$

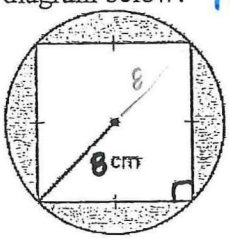
53 The area of the parallelogram is 481



$A = 37(13)$

$= 481\text{u}^2$

54 What is the area of the shaded region in the diagram below? 73.1u^2

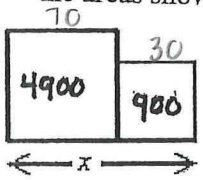


$A(\bigcirc) = \pi(8)^2 = 64\pi$

$A(\square) = \frac{16(16)}{2} = 128$

$= 73.06$

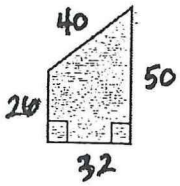
55 The figure below is made up of two squares with the areas shown. What is the length of x? $x = 100$



$x = 70 + 30$

$x = 100$

56 The area of the quadrilateral is 1216u^2



$A = \frac{32(26 + 50)}{2}$

$= 1216$

57 The area of a regular octagon is 20 cm^2. What is the area of a regular octagon with sides five times as large as the sides of the first octagon? 500 cm^2

$A = 20$

$\frac{a}{b} = \frac{1}{5} \rightarrow \frac{a^2}{b^2} = \frac{1}{25}$

$\frac{1}{25} = \frac{20}{x}$

$x = 500$

58 The ratio of the side lengths of two regular hexagons is 5 to 12. If the area of the smaller hexagon is 18 square units, then the area of the larger hexagon is 103.7

$\frac{a}{b} = \frac{5}{12} \rightarrow \frac{a^2}{b^2} = \frac{25}{144}$

$\frac{25}{144} = \frac{18}{x}$

$25x = 2592$

$x = 103.68$

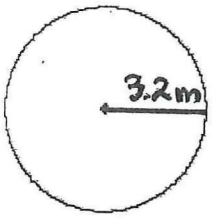
59 Find the length of a 30° arc in a circle with a radius of 5. Arc length = 2.6

$\frac{x}{2\pi(5)} = \frac{30}{360}$

$360x = 30(10\pi)$

$x = 2.6$

60 Find the area. $A = 10.24\pi$ or 32.2

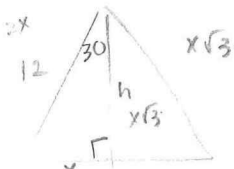


$A = \pi(3.2)^2$

$= 10.24\pi$

$= 32.2$

61 Find the area of an equilateral triangle with side length 12. $A = 36\sqrt{3}$



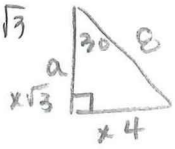
$x\sqrt{3} = 6\sqrt{3}$ $\quad A = \frac{12(6\sqrt{3})}{2}$

$= 36\sqrt{3}$

62 A regular hexagon has a side length of 8. Its area is $96\sqrt{3}$

$n = 6$
$s = 8$
$P = 48$

$a = 4\sqrt{3}$



$A = \frac{4\sqrt{3}(48)}{2}$

$= 96\sqrt{3}$

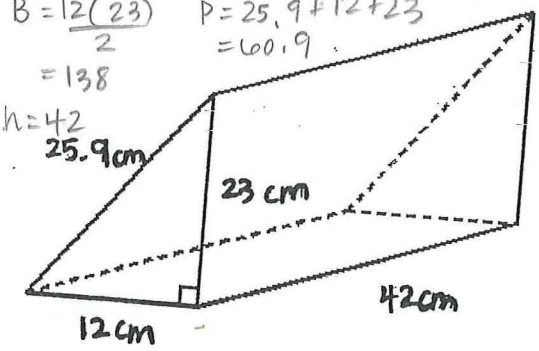
63 What is the area of a regular pentagon if its apothem has a length of 7 feet and each side has a length of 9.2 feet? $A = 161\ ft^2$

$n = 5$
$a = 7$
$s = 9.2$
$P = 5(9.2)$
$= 46$

$A = \frac{7(46)}{2}$

$= 161$

64 Find the surface area of the triangular prism. $S = 2833.8\ cm^2$



$B = \frac{12(23)}{2}$
$= 138$

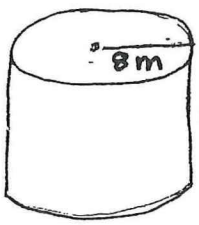
$P = 25.9 + 12 + 23$
$= 60.9$

$h = 42$

$S = 2(138) + 60.9(42)$

$S = 2833.8\ cm^2$

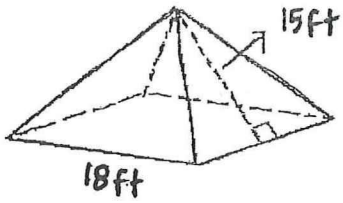
65 Find the surface area of the cylinder to the nearest rounding square unit. Use $\pi \approx 3.14$. $S = 929\ m^2$



$r = 8$
$h = 10.5$

$S = 2\pi(8)^2 + 2\pi(8)(10.5)$
$= 128\pi + 168\pi$
$S = 296\pi$
$296(3.14)$
$= 929.4$
$= 929$

66 Find the surface area of the lateral faces on the regular pyramid below. $540\ ft^2$



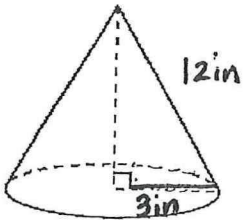
$S = B + \frac{Pl}{2}$

$P = 4(18)$
$= 72$

$\frac{72(15)}{2}$

$= 540\ ft^2$

67 The surface area of the right cone shown is $45\pi\ in^2$



$S = \pi(3)^2 + \pi(3)(12)$
$9\pi + 36\pi$
$= 45\pi\ in^2$

68 A regular pyramid has a base area of $12\sqrt{3}$ in.^{2}, a base perimeter of 24 in., and a slant height of $8\sqrt{3}$ in. Its surface area is $108\sqrt{3}\ in^2$

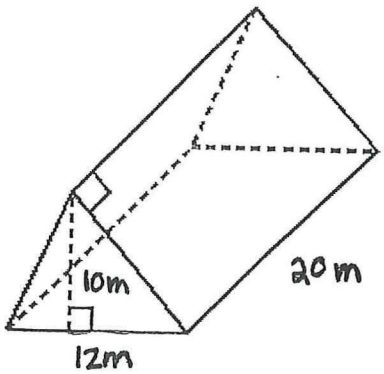
$B = 12\sqrt{3}$
$P = 24$
$l = 8\sqrt{3}$

$S = 12\sqrt{3} + \frac{24(8\sqrt{3})}{2}$

$12\sqrt{3} + 96\sqrt{3}$

$S = 108\sqrt{3}$

69 Find the volume of the right triangular prism. $V = 400\ m^3$



$V = \frac{60(20)}{3}$

$V = 400\ m^3$

$B = \frac{12(10)}{2}$
$= 60$

$h = 20$

70 An aquarium in a restaurant is a rectangular prism and measures 3.5 feet by 4 feet by 4 feet. What is the volume of the aquarium? $V = 56\ ft^3$

$V = 3.5(4)(4)$

$V = 56\ ft^3$

71 Find the exact volume of a cylinder that has a height of 18 inches and a radius of 6 inches.

$V = 648\pi \text{ in}^3$

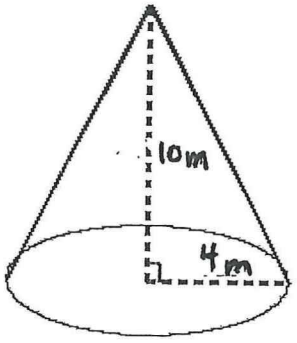
$h = 18$

$r = 6$

$V = \pi(6)^2(18)$

$V = 648\pi \text{ in}^3$

72 Calculate the volume of the cone. Use $\pi \approx 3.14$. $V = 167.5 \text{ m}^3$



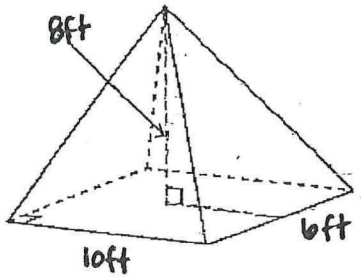
$V = \frac{\pi(4)^2(10)}{3}$

$= \frac{160\pi}{3}$

$= 53.\overline{3}(3.14)$

$V = 167.5 \text{ m}^3$

73 The volume of the pyramid below is 160 ft^3.



$V = \frac{10(6)(8)}{3}$

$V = 160 \text{ ft}^3$

* 74 Find the volume of a sphere 16 ft in diameter. Use $\pi \approx 3.14$ and round your answer to the nearest tenth. $V = 2143.6 \text{ ft}^3$

add tenth

$d = 16$

$r = 8$

$V = \frac{4\pi(8)^3}{3} = \frac{2048\pi}{3}$

$V = 2143.6 \text{ ft}^3$