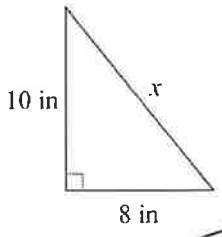
Geometry Second Semester
Final Review Packet

Name: Key

Unit 6: Right Triangles

Find the missing side of each triangle. Leave your answers in simplest radical form.

1.)



$10^2+8^2=x^2$

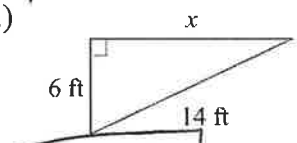
$\sqrt{164}=\sqrt{x^2}$

$\sqrt{4}\sqrt{41}$

$2\sqrt{41}=x$

A) $2\sqrt{57}$ in
B) $2\sqrt{41}$ in
C) 6 in
D) $2\sqrt{66}$ in

2.)



$6^2+x^2=14^2$

$36+x^2=196$

$x^2=160$

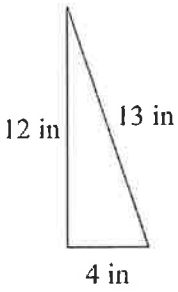
$\sqrt{16}\sqrt{10}$

$x=4\sqrt{10}$

A) $4\sqrt{10}$ ft
B) $2\sqrt{58}$ ft
C) $2\sqrt{31}$ ft
D) $2\sqrt{89}$ ft

State if each triangle is acute, obtuse, or right.

3.)



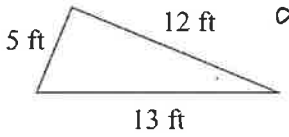
$4^2+12^2\_13^2$

$16+144\_169$

$160<169$

A) Acute
B) Right
C) Obtuse
D) Not a triangle

4.)



$5^2+12^2\_13^2$

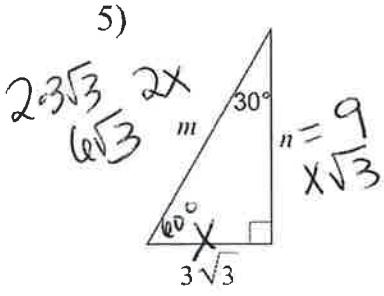
$25+144\_13^2$

$169=169$

A) Acute
B) Right
C) Obtuse
D) Not a triangle

Find the missing side lengths. Leave your answers as radicals in simplest form.

5)



$2\cdot3\sqrt{3}$ $2x$

$6\sqrt{3}$

$n=9$

$x\sqrt{3}$

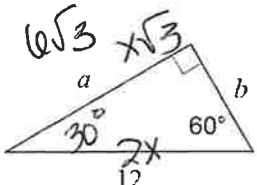
$3\sqrt{3}\cdot\sqrt{3}$

$3\sqrt{9}$

$3\cdot3=9$

A) $m=6\sqrt{3},\ n=9\sqrt{3}$
B) $m=12,\ n=9\sqrt{3}$
C) $m=12,\ n=9$
D) $m=6\sqrt{3},\ n=9$

6) $6\sqrt{3}$ $x\sqrt{3}$



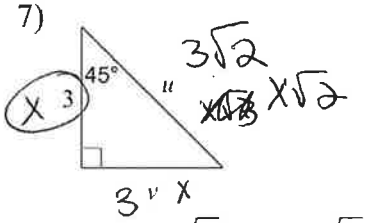
$x6$

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

$6=x$

A) $a=6\sqrt{3},\ b=6$
B) $a=3\sqrt{3},\ b=4\sqrt{3}$
C) $a=3\sqrt{3},\ b=6$
D) $a=6\sqrt{3},\ b=4\sqrt{3}$

7)



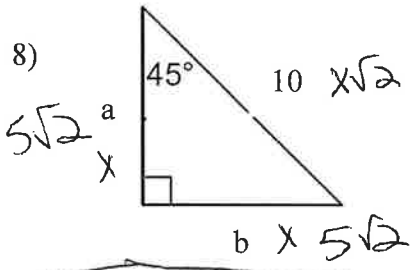
A) $u = 3\sqrt{3},\ v = 3\sqrt{2}$

B) $u = 3\sqrt{2},\ v = 3$

C) $u = 3\sqrt{6},\ v = 3$

D) $u = 3\sqrt{2},\ v = 3\sqrt{3}$

8)



A) $a = 5\sqrt{2},\ b = 5\sqrt{2}$

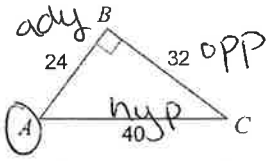
B) $a = 5,\ b = 5$

C) $a = 10\sqrt{2},\ b = 10$

D) $a = 5,\ b = 5\sqrt{2}$

Find the value of each trigonometric ratio.

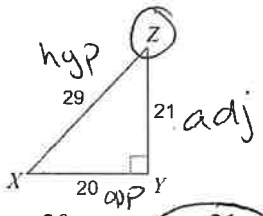
9) $\tan A$



A) $\frac{5}{3}$ B) $\frac{3}{5}$

C) $\frac{4}{3}$ D) $\frac{5}{4}$

10) $\cos X$

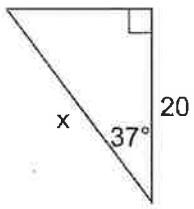


A) $\frac{20}{29}$ B) $\frac{21}{29}$

C) $\frac{29}{21}$ D) $\frac{21}{20}$

Find the missing side. Round to the nearest tenth.

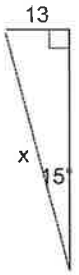
11)



A) 31.6 B) 16.0

C) 35.1 D) 25.0

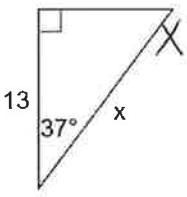
12)



A) 68.9 B) 3.4

C) 38.3 D) 50.2

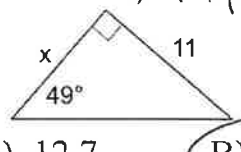
13)



A) 10.4 B) 14.8

C) 16.1 D) 16.3

14)

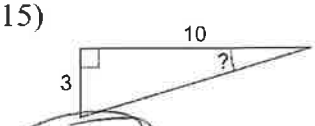


A) 12.7 B) 9.6

C) 13.9 D) 11.1

Find the measure of the indicated angle to the nearest degree.

15)



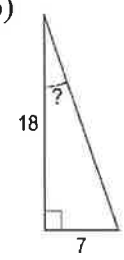
A) 17° B) 27°
C) 25° D) 73°

$\tan X = \frac{3}{10}$

$X = \tan^{-1}\left(\frac{3}{10}\right)$

$X = 17°$

16)



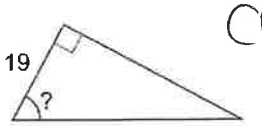
A) 4° B) 23°
C) 69° D) 21°

$\tan X = \frac{7}{18}$

$X = \tan^{-1}\left(\frac{7}{18}\right)$

$X = 21°$

17)



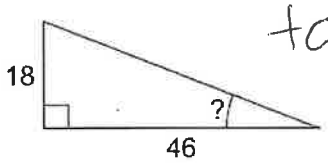
A) 65° B) 25°
C) 28° D) 62°

$\cos X = \frac{19}{40}$

$X = \cos^{-1}\left(\frac{19}{40}\right)$

$X = 62°$

18)



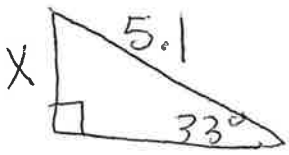
A) 23° B) 34°
C) 69° D) 21°

$\tan X = \frac{18}{46}$

$X = \tan^{-1}\left(\frac{18}{46}\right)$

$X = 21°$

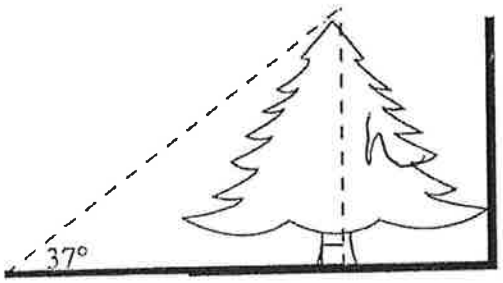
19) A slide 5.1 m long makes an angle of 33° with the ground. How high is the top of the slide above the ground?



$\sin X = \frac{X}{5.1}$ $5.1 \cdot \sin 33 = X$

$27.9\text{m} = X$

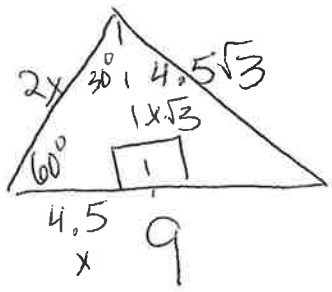
20) From a point 65 ft from the base of a tree, the angle from the ground level to the top of the tree is 37°. Find the height of the tree to the nearest foot.



$65 \cdot \tan 37 = \frac{h}{65} \cdot 65$

$49\text{ ft} = h$

21) If an equilateral triangle has a side of 9, find its area.



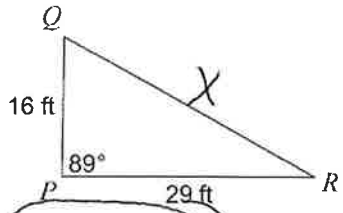
$A = \frac{1}{2}bh$ $b = 9$ $h = 4.5\sqrt{3}$

$A = \frac{1}{2}(9)(4.5\sqrt{3})$

$A = 20.25\sqrt{3}\ u^2$

Use the Law of Cosines to find the missing side length. $c^2 = a^2 + b^2 - 2ab\cos C$

22) Find QR

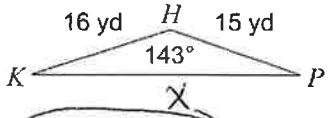


A) 32.9 ft B) 31.7 ft
C) 38.3 ft D) 34.6 ft

$x^2 = 16^2 + 29^2 - 2(16)(29)\cos 89$

$\sqrt{x^2} = \sqrt{1080.8}$ $x = 32.9$

23) Find KP



A) 29.4 yd B) 31.2 yd
C) 27.6 yd D) 32.5 yd

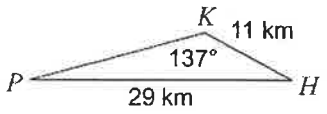
$x^2 = 16^2 + 15^2 - 2(15)(16)\cos 143$

$\sqrt{x^2} = \sqrt{864.3}$

$x = 29.4$

Use the Law of Sines to find the missing angles and side lengths. $\frac{\sin(A)}{a} = \frac{\sin(B)}{b}$

24) Find $m\angle P$



A) 11° B) 9°
C) 15° D) 16°

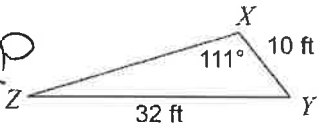
$\frac{\sin 137}{29} = \frac{\sin P}{11}$

$\frac{11 \cdot \sin 137}{29} = \frac{29 \cdot \sin P}{29}$

$0.259 = \sin P$

$15^\circ = P$

25) Find $m\angle Z$



A) 12° B) 20°
C) 16° D) 17°

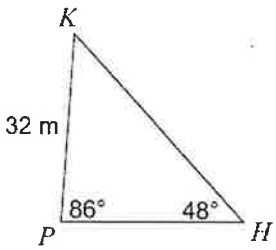
$\frac{\sin 111}{32} = \frac{\sin Z}{10}$

$\frac{10 \cdot \sin 111}{32} = \frac{32 \sin Z}{32}$

$.292 = \sin Z$

$17^\circ = Z$

26) Find HK



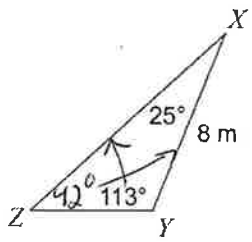
A) 42 m B) 46 m
C) 43 m D) 44 m

$\frac{\sin 86}{x} = \frac{\sin 48}{32}$

$\frac{32 \cdot \sin 86}{\sin 48} = \frac{\sin 48 \cdot x}{\sin 48}$

$43m = x$

27) Find XZ



A) 13 m B) 14 m
C) 11 m D) 10 m

$\frac{\sin 113}{x} = \frac{\sin 42}{8}$

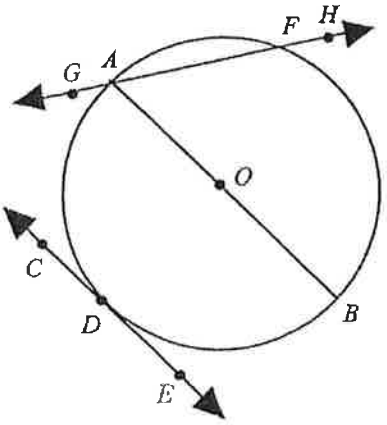
$\frac{8 \cdot \sin 113}{\sin 42} = \frac{x \cdot \sin 42}{\sin 42}$

$11 = x$

Unit 7: Circles

28) What is the best name for $\overleftrightarrow{CD}$?

A) Chord
B) Secant
C) Tangent
D) Diameter



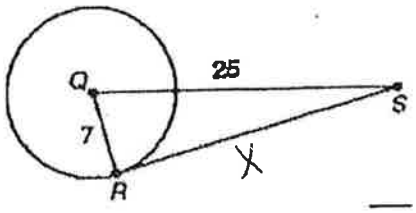
29) What is the best name for $\overleftrightarrow{GH}$?

A) Chord
B) Secant
C) Tangent
D) Diameter

29) What is the best name for $\overline{AB}$?

A) Chord
B) Secant
C) Tangent
D) Diameter

30) Find the length of RS.

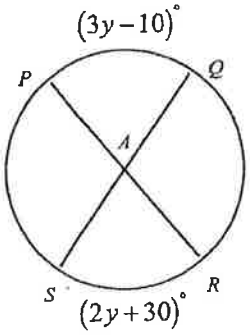


$7^2 + x^2 = 25^2$

$x = 24$

31) Find the m $\overset{\frown}{PQ}$

A) 40°
B) 50°
C) 110°
D) 120°

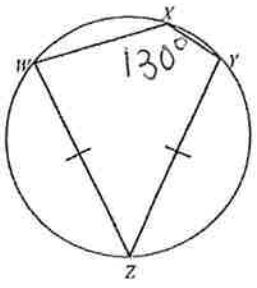


$3y - 10 = 2y + 30$
$-2y \quad -2y$

$y = 40$

$m\overset{\frown}{PQ} = 3(40) - 10$
$= 110°$

32) Given the measure of angle X = 130°, find the measure of angle Z.

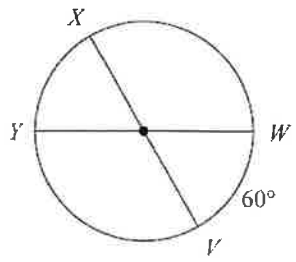


$180 - 130 = 50°$

$m\angle Z = 50°$

Find the measure of each arc.

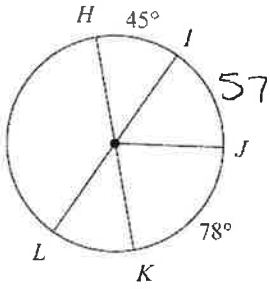
33) $m\overset{\frown}{VY}$



$180-60=120^\circ$

A) 97° B) 144°
C) 66° D) 120°

34) $m\overset{\frown}{IK}$



$180-45-78$
$=57^\circ$

$m\overset{\frown}{IK}=57+78$
$=135^\circ$

Use the information provided to write the equation of each circle.

35) Center: $(-11, -11)$
Radius: 4

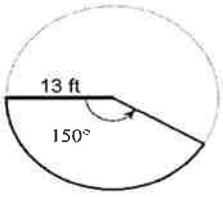
A) $(x+11)^2+(y+11)^2=256$
B) $(x-11)^2+(y+11)^2=16$
C) $(x+11)^2+(y+11)^2=16$
D) $(x-11)^2+(y+11)^2=9$

36) Center: $(-2, 8)$
Radius: 4

A) $(x+8)^2+(y+3)^2=9$
B) $(x+2)^2+(y-8)^2=16$
C) $(x+8)^2+(y-2)^2=16$
D) $(x-8)^2+(y-2)^2=16$

Find the area of each sector. $A=\pi r^2\left(\frac{m}{360}\right)$

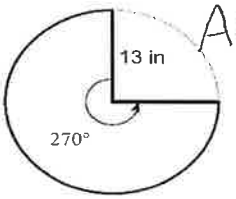
37)



$A=\pi(13)^2\left(\frac{150}{360}\right)$
$=$

A) 26π ft² B) $\frac{65\pi}{6}$ ft²
C) $\frac{63\pi}{4}$ ft² D) $\frac{845\pi}{12}$ ft²

38)

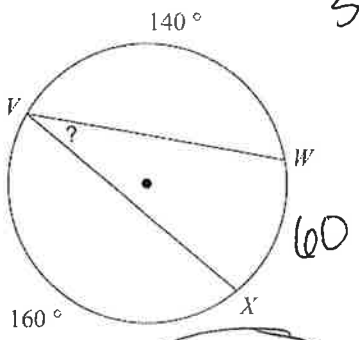


$A=\pi(13)^2\left(\frac{270}{360}\right)$
$A=$

A) $\frac{26\pi}{3}$ in² B) $\frac{5\pi}{6}$ in²
C) $\frac{39\pi}{2}$ in² D) $\frac{507\pi}{4}$ in²

Find the measure of the indicated arc or angle.

39)

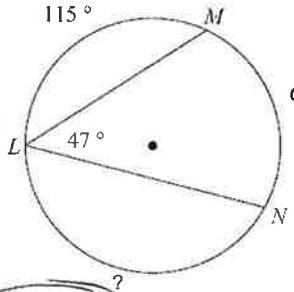


$360-140-160$
$=60$

$m\angle V=\frac{1}{2}(60)$
$=30^\circ$

A) 45° B) 30°
C) 32° D) 27°

40)



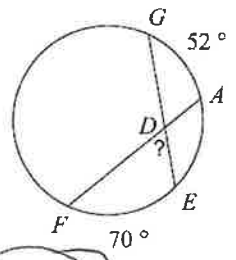
$47\times2=94^\circ$

94°

$360-115-94$
$=151^\circ$

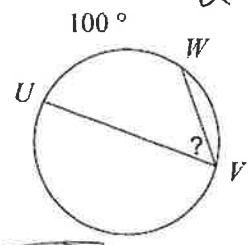
A) 151° B) 127°
C) 91° D) 94°

41) $x = \frac{1}{2}(52+70)$
$= 61°$



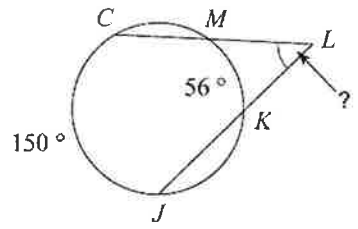
A) 61° B) 43°
C) 36° D) 46°

42) $\frac{1}{2}\ 100 = 50°$



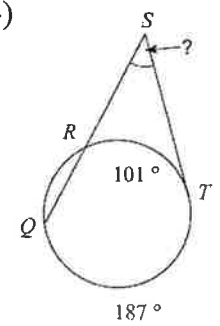
A) 50° B) 75°
C) 45° D) 32°

43) $x = \frac{1}{2}(150-56)$
$= 47°$



A) 67° B) 35°
C) 47° D) 63°

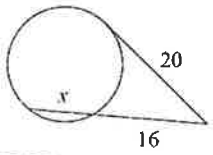
44) $x = \frac{1}{2}(187-101)$
$= 43°$



A) 64° B) 34°
C) 43° D) 38°

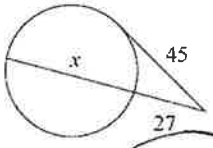
Find the value of x.

45) $20^2 = 16(x+16)$
$400 = 16x + 256$
$\frac{144}{16} = \frac{16x}{16}$
$= x$



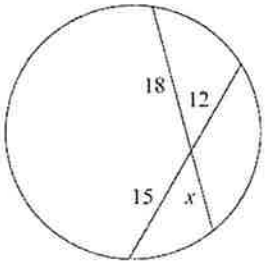
A) 9 B) 13
C) 11 D) 6

46) $45^2 = 27(27+x)$
$2025 = 729 + 27x$
$\frac{1296}{27} = \frac{27x}{27}$
$x = 48$



A) 51 B) 48
C) 50 D) 52

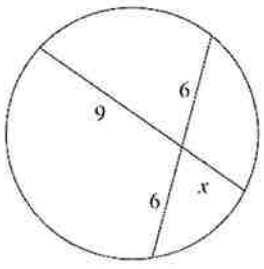
47)



$12 \cdot 15 = 18x$
$\frac{180}{18} = \frac{18x}{18}$
$10 = x$

A) 7 B) 14
C) 8 D) 10

48)



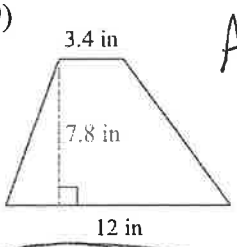
$9x = 36$
$\frac{9x}{9} = \frac{36}{9}$
$x = 4$

A) 7 B) 6
C) 4 D) 3

Unit 8: Area, Surface Area, and Volume

Find the area of each figure.

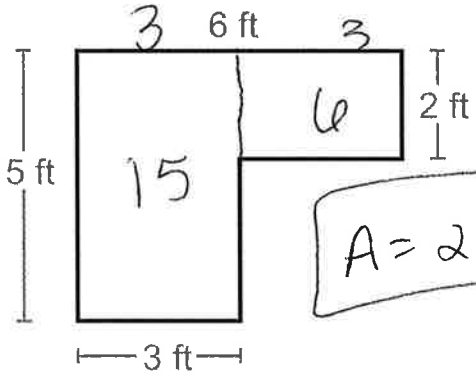
49)



$A = \frac{1}{2}(3.4+12)(7.8)$

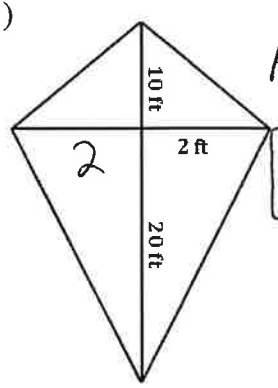
A) 60.06 in²
B) 30 in²
C) 65.16 in²
D) 120.12 in²

50)



$A = 21\ ft^2$

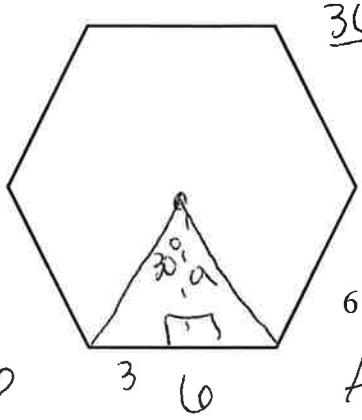
51)



$A = \frac{1}{2}(30)(4)$

$A = 60\ ft^2$

52)



$\frac{360}{6} = 60°$

$\tan 30 = \frac{3}{a}$

$a = 5.2$

$P = 6 \cdot 6 = 36$

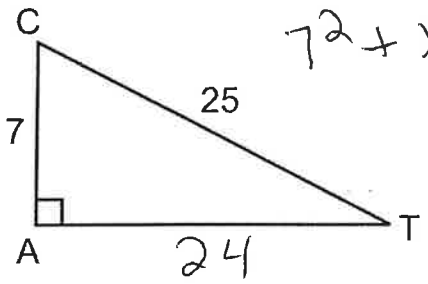
6 cm

$A = \frac{1}{2} P \cdot a$

$A = \frac{1}{2}(36)(5.2)$

$= 93.6\ cm^2$

53) Find the area of the triangle.



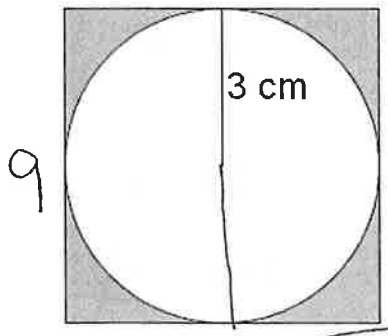
$7^2 + x^2 = 25^2$

$x = 24$

$A = \frac{1}{2}(7)(24)$

$A = 84\ u^2$

54) Find the area of the shaded region.



$A_O = \pi(3)^2 = 9\pi$

$A_{\square} = 9 \cdot 9 = 81$

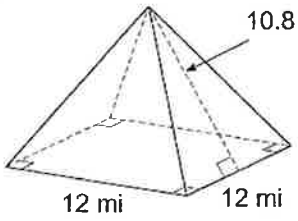
$A = (81 - 9\pi)\ cm^2$

$LA = \frac{1}{2}P \cdot \ell$

$SA = B + \frac{1}{2}P \cdot \ell$

Find the lateral area of the square pyramid.

55)



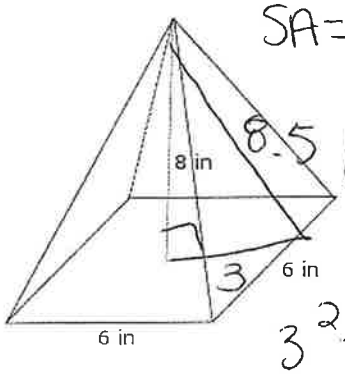
$LA = \frac{1}{2}(48)(10.8)$

$P = 48$

A) 295.2 mi²
B) 225.2 mi²
C) 259.2 mi²
D) 270.7 mi²

Find the surface area of the pyramid.

56)



$SA = 36 + \frac{1}{2}(24)(8.5$

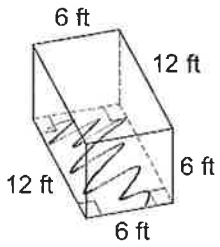
$SA = 138 in^2$

$3^2 + 8^2 = \ell^2$

$8.5 = \ell$

Find the surface area of the prism and cylinder.

57)



$SA = 2B + Ph$

$= 2(72) + 36(6)$

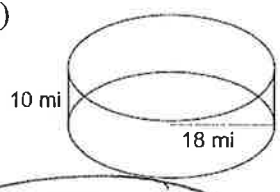
$= 360 ft^2$

$B = 6 \cdot 12 = 72$

$P = 6 + 12 + 6 + 12 = 36$

A) 288 ft²
B) 371 ft²
C) 213 ft²
D) 360 ft²

58)



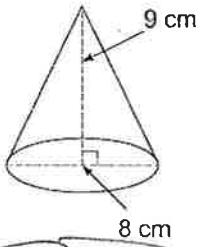
$SA = 2\pi(18)^2 + 2\pi(18)(10$

$= 1008\pi mi^2$

A) 1008π mi²
B) 1363π mi²
C) 1102π mi²
D) 1287π mi²

Find the volume of each figure.

59)



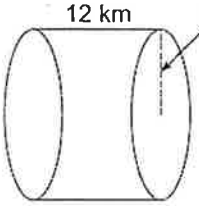
$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}\pi(4)^2(9)$

$= 48\pi cm^3$

A) 48π cm³
B) 51π cm³
C) 30π cm³
D) 192π cm³

60)

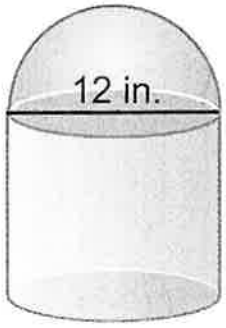


$V = \pi(8)^2(12)$

$= 768\pi km^3$

A) 504π km³
B) 768π km³
C) 860π km³
D) 887π km³

61) Find the volume of the composite figure.



$V_{cylinder} = \pi(6)^2(13)$

$= 468\pi in^2$

$V_{\frac{1}{2}sphere} = \frac{1}{2}\left(\frac{4}{3}\right)\pi(6)^3$

144π

$V = 468\pi + 144\pi$

$= 612\pi in^3$

62) Find the height of the cone given its volume is 64π cm^3 and radius is 6.

$V = \frac{1}{3}\pi r^2 h$

$64\pi = \frac{1}{3}\pi(6)^2 h$

$64\pi = 12\pi h$

$5.3\text{cm} = h$

63) Find the radius of a sphere that has a surface area of 120π m^2.

$SA = 4\pi r^2$

$\frac{120\pi}{4\pi} = \frac{4\pi r^2}{4\pi}$

$\sqrt{30} = \sqrt{r^2}$

$r = \sqrt{30} \approx 5.5\text{m}$

64) Define a polyhedron and give an example of one.

A solid made up of 4 or more polygons.

Ex: Cube

65) What is the perpendicular cross section of a cone?

triangle

Unit 9: Probability

66) A coin is flipped 5 times. What is the probability that the result is heads all 5 times?

$\frac{1}{2}\cdot\frac{1}{2}\cdot\frac{1}{2}\cdot\frac{1}{2}\cdot\frac{1}{2} = \frac{1}{32} = .03$

67) Two number cubes are rolled at the same time. What is the probability that the sum of the two cubes is 3 or 10?

$\frac{2}{36} + \frac{3}{36} = \frac{5}{36} = .14$

68) You have a standard deck of 52 cards. If you draw two cards with replacement, what is the approximate probability of drawing a 10 then a queen?

$\frac{4}{52}\cdot\frac{4}{52} = \frac{16}{2704} = .01$

69) The table shows the results of randomly selected car insurance quotes for 125 cars made by an insurance company in one week. What is the probability that a part chosen at random from this group is a teen with 0 accidents?

	Teen	Adult	
0 accidents	15	53	68
1 accident	4	32	36
2+ accidents	9	12	21
	28	97	125

$\frac{15}{125} = .12$

70) Find the probability of a randomly selected point is in the square.

$A = 300$

$P = \frac{64}{300} = .21$