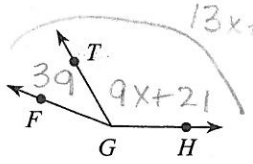
Foundational Geometry 2016, 2017 Name Mrs. Stirn

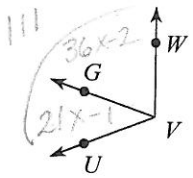
Final Exam Review - Part 1

1) $m\angle FGT = 39°$, $m\angle TGH = 9x + 21$, and $m\angle FGH = 13x + 16$. Find x.



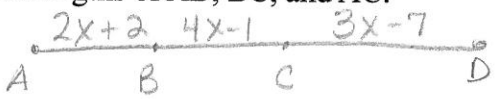
$9x + 60 = 13x + 16$
$44 = 4x$
$x = 11$

2) $m\angle UVW = 111°$, $m\angle GVW = 36x - 2$, and $m\angle UVG = 21x - 1$. Find $m\angle GVW$.



$57x - 3 = 111$
$57x = 114$
$x = 2$
$m\angle GVW = 70°$

3) Point B lies between A and C, and point C lies between points B and D. If AB = 2x + 2, BC = 4x - 1, CD = 3x - 7, and AD = 30, find the lengths of AB, BC, and AC.



$9x - 6 = 30$
$9x = 36$
$x = 4$

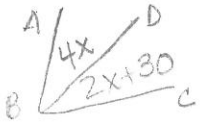
AB = 10
BC = 15
AC = 25

4) Angle A and angle B are complementary. If angle A measures 7x + 1 and angle B measures 5x - 7, find the measure of each angle.

$7x + 1 + 5x - 7 = 90$
$12x - 6 = 90$
$12x = 96$
$x = 8$

$m\angle A = 57°$
$m\angle B = 33°$

5) Ray BD bisects angle ABC. If angle ABD measures 4x and angle DBC measures 2x + 30, find the measure of angle ABC.



$4x = 2x + 30$
$2x = 30$
$x = 15$

$60 + 60$
$m\angle ABC = 120$

6) For the points A(0, 5), B(2, 3), C(-4, 2), and D(-1, -2), determine whether lines AB and CD are parallel, perpendicular, or neither.

AB: $\frac{3-5}{2-0} = \frac{-2}{2} = -1$
CD: $\frac{2-(-2)}{-4-(-1)} = \frac{4}{-3}$

neither

7) Find the slope of a line that is perpendicular to a line through the points A(-3, 6) and B(7, 2).

$m = \frac{2-6}{7-(-3)} = \frac{-4}{10} = \frac{-2}{5}$

$\perp$ slope = $\frac{5}{2}$

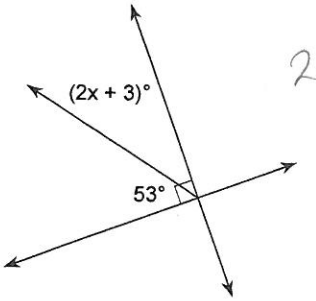
Find the distance between each pair of points. Round your answer to the nearest tenth, if necessary.

8) (4, –6), (–4, 2)

$\sqrt{(-4-4)^2 + (2-(-6))^2}$
$\sqrt{(-8)^2 + (8)^2}$
$= \sqrt{64 + 64} = \sqrt{128}$
or 11.3

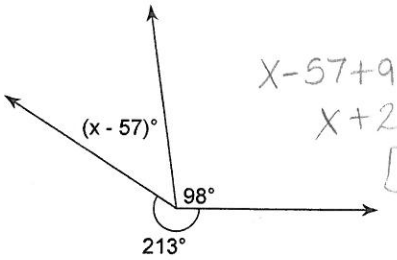
Find the value of x.

9)



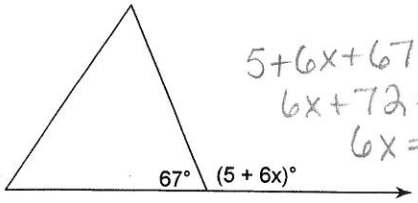
$2x + 3 + 53 = 90$
$2x + 56 = 90$
$2x = 34$
$x = 17$

10)



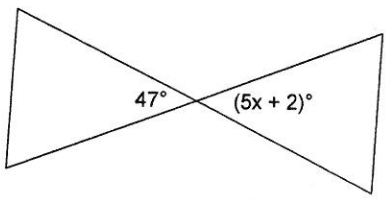
$x - 57 + 98 + 213 = 360$
$x + 254 = 360$
$x = 106$

11)



$5 + 6x + 67 = 180$
$6x + 72 = 180$
$6x = 108$
$x = 18$

12)



$5x + 2 = 47$
$5x = 45$
$x = 9$

Find the midpoint of the line segment with the given endpoints.

13) $(8, 10)$, $(7, 6)$

$\frac{8+7}{2}, \frac{10+6}{2}$

$\left(\frac{15}{2}, 8\right)$

Find the other endpoint of the line segment with the given endpoint and midpoint.

14) Endpoint: $(-10, 6)$, midpoint: $(0, 3)$

$\frac{-10+x}{2}=0$ $\quad$ $\frac{6+y}{2}=3$

$-10+x=0$ $\quad$ $6+y=6$

$x=10$ $\quad$ $y=0$

$(10, 0)$

Write the slope-intercept form of the equation of the line.

15) through: $(2, -4)$, parallel to $y = -3x + 1$

$y+4=-3(x-2)$

$y+4=-3x+6$

$y=-3x+2$

16) through: $(-2, 3)$, perp. to $y=\frac{2}{3}x+4$

$y-3=-\frac{3}{2}(x+2)$

$y-3=-\frac{3}{2}x-3$

$y=-\frac{3}{2}x$

17) through: $(3, -3)$ and $(0, 2)$

$m=\frac{2-(-3)}{0-3}=\frac{5}{-3}$

$y-2=-\frac{5}{3}(x-0)$

$y-2=-\frac{5}{3}x$

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

18) through: $(4, -5)$ and $(-2, -3)$

$m=\frac{-3-(-5)}{-2-4}=\frac{2}{-6}=-\frac{1}{3}$

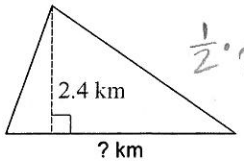
$y+5=-\frac{1}{3}(x-4)$

$y+5=-\frac{1}{3}x+\frac{4}{3}$

$y=-\frac{1}{3}x-\frac{11}{3}$

Find the missing measurement. Round your answer to the nearest tenth.

19)

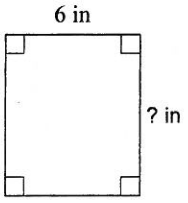


Area = 5 km²

$\frac{1}{2}\cdot 2.4\cdot(x)=5$

$x = 4.2$ km

20)



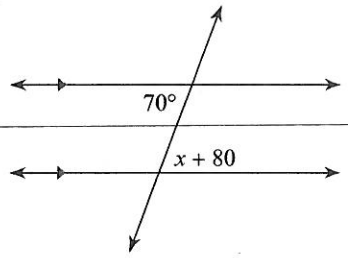
Area = 43.2 in²

$6x=43.2$

$x = 7.2$ in

Solve for *x*.

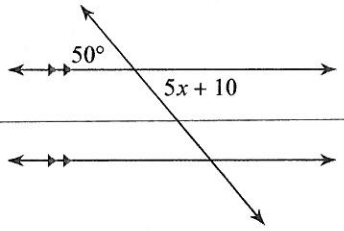
21)



$x+80=70$

$x=-10$

22)

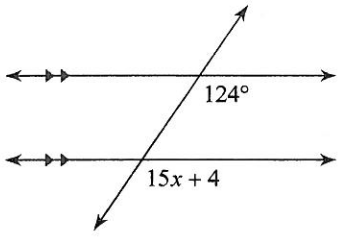


$5x+10=50$

$5x=40$

$x=8$

23)

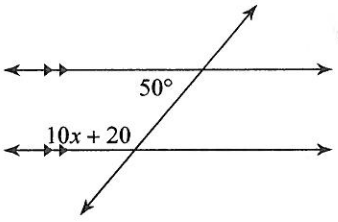


$124=15x+4$

$120=15x$

$x=8$

24)



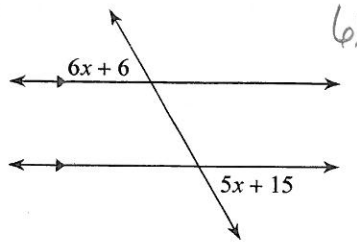
$10x+20+50=180$

$10x+70=180$

$10x=110$

$x=11$

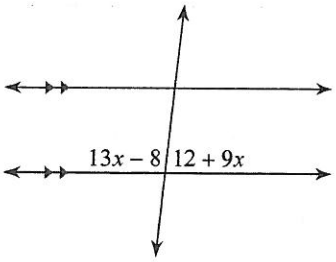
25)



$6x+6=5x+15$

$x=9$

26)



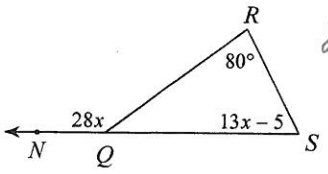
$13x-8+12+9x=180$

$22x+4=180$

$22x=176$

$x=8$

27)

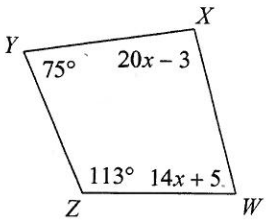


$28x=80+13x-5$

$15x=75$

$x=5$

28)



$34x+190=360$

$34x=170$

$x=5$

Find the slope of the line. (Hint: y = mx + b)

29) $3x-2y=2$

$-2y=-3x+2$

$y=\frac{3}{2}x-1$

Slope = $\frac{3}{2}$

Find the slope of the line through each pair of points.

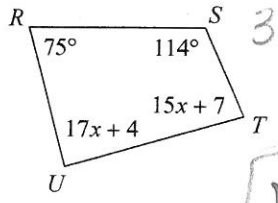
30) $(-20, 3), (-10, -17)$

$\frac{-17-3}{-10-(-20)}=\frac{-20}{10}$

Slope = -2

Find the measure of each angle indicated.

31) $m\angle U$



$32x+200=360$

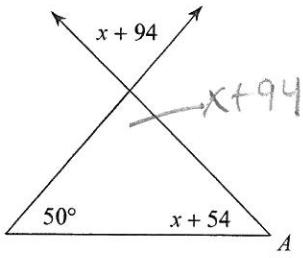
$32x=160$

$x=5$

$m\angle U=89°$

Find the measure of angle A.

32)



$2x+148+50=180$

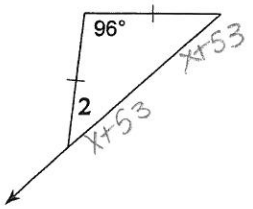
$2x=-18$

$x=-9$

$m\angle A=45°$

Find the value of *x*.

33) $m\angle 2 = x + 53$



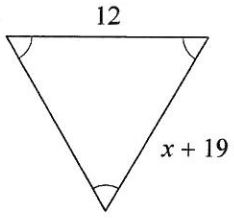
$2x+106+96=180$

$2x+202=180$

$2x=-22$

$x=-11$

34)

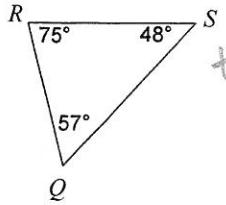


$x+19=12$

$x=-7$

Order the sides of each triangle from shortest to longest.

35)



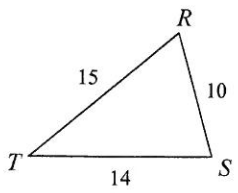
Shortest: $\overline{QR}$

then $\overline{RS}$

Longest $\overline{QS}$

Order the angles in each triangle from smallest to largest.

36)



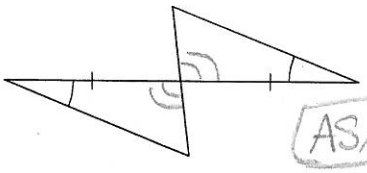
Smallest: $\angle T$

Then $\angle R$

Largest $\angle S$

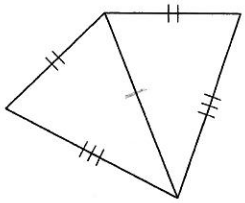
State if the two triangles are congruent. If they are, state how you know. (SAS, ASA, SSS, AAS)

37)



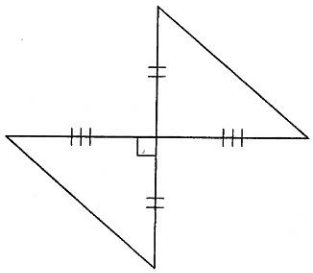
ASA

38)



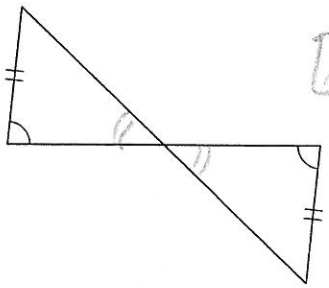
SSS

39)



SAS

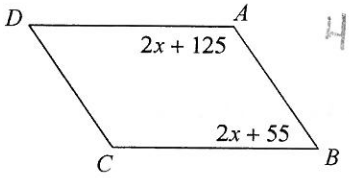
40)



AAS

Solve for *x*. Each figure is a parallelogram.

41)

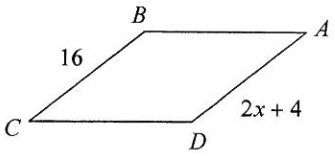


$4x+180=180$

$4x=0$

$x=0$

42)



$2x+4=16$

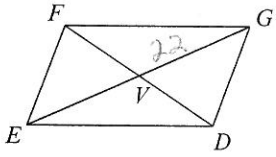
$2x=12$

$x=6$

43) $VG = 22$

$EG = 23x - 2$

$EG = 44$

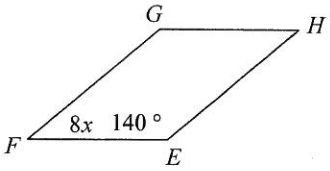


$23x-2=44$

$23x=46$

$x=2$

44)



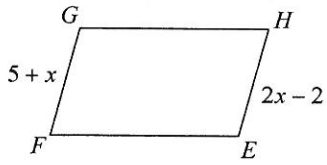
$8x+140=180$

$8x=40$

$x=5$

Find the measurement indicated in each parallelogram.

45) Find *FG*



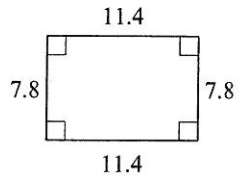
$5+x=2x-2$

$7=x$

$FG=12$

State all possible names for each figure.

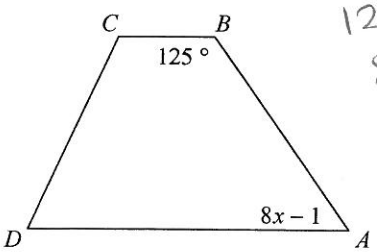
46)



Rectangle
Parallelogram
Quadrilateral

Solve for *x*. Each figure is a trapezoid.

47)



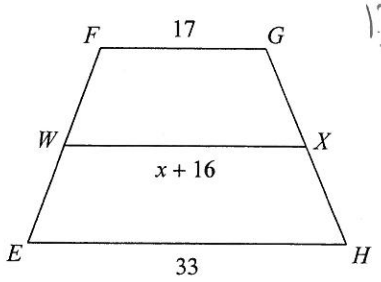
$125+8x-1=180$

$8x+124=180$

$8x=56$

$x=7$

48)



$\frac{17+33}{2} = x+16$

$50=2x+32$

$2x=18$

$x=9$

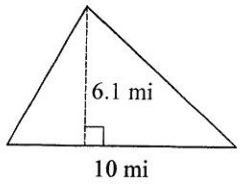
Foundational Geometry 2016, 2017

Name Mrs. Stirn

Final Exam Review - Part 2

Find the area of each.

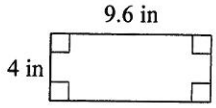
1)



$A = \frac{1}{2}(10)(6.1)$

30.5 mi^2

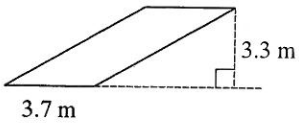
2)



$A = (9.6)(4)$

38.4 in^2

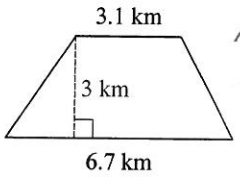
3)



$A = (3.7)(3.3)$

12.21 m^2

4)

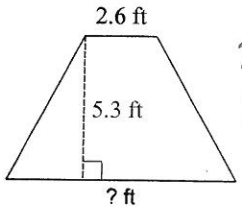


$A = \frac{1}{2}(3)(3.1+6.7)$

14.7 km^2

Find the missing measurement. Round your answer to the nearest tenth.

5)



Area = 29.2 ft²

$29.2 = \frac{1}{2}(5.3)(2.6+x)$

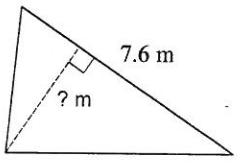
$29.2 = 2.65(2.6+x)$

$29.2 = 6.89 + 2.65x$

$22.31 = 2.65x$

$x = 8.4 \text{ ft}$

6)



Area = 14.4 m²

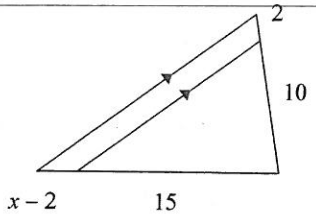
$14.4 = \frac{1}{2}(7.6)(x)$

$14.4 = 3.8x$

$x = 3.8 \text{ m}$

Solve for *x*.

7)



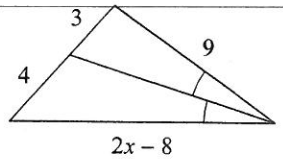
$\frac{2}{10} = \frac{x-2}{15}$

$10x - 20 = 30$

$10x = 50$

$x = 5$

8)



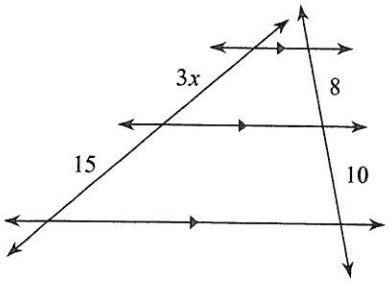
$\frac{9}{3} = \frac{2x-8}{4}$

$6x - 24 = 36$

$6x = 60$

$x = 10$

9)

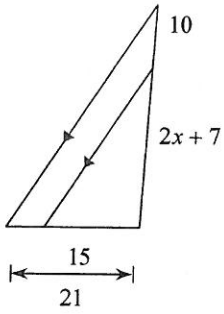


$\frac{3x}{15} = \frac{8}{10}$

$30x = 120$

$x = 4$

10)



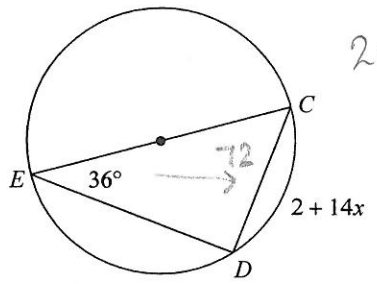
$\frac{2x+7}{10} = \frac{15}{6}$

$12x + 42 = 150$

$12x = 108$

$x = 9$

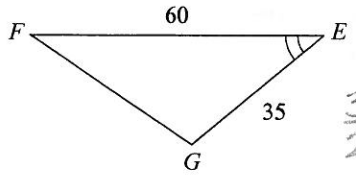
11)



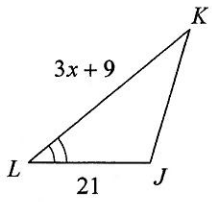
$2+14x=72$
$14x=70$
$x=5$

Solve for *x*. The triangles in each pair are similar.

12)



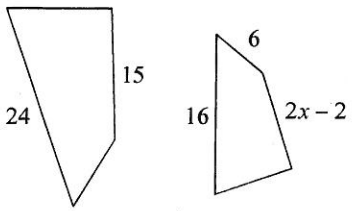
$\frac{35}{21}=\frac{5}{3}$



$\frac{5}{3}=\frac{60}{3x+9}$
$15x+45=180$
$15x=135$
$x=9$

Solve for *x*. The polygons in each pair are similar.

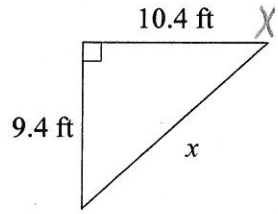
13)



$\frac{15}{2x-2}=\frac{24}{16}\left(\frac{3}{2}\right)$
$\frac{15}{2x-2}=\frac{3}{2}$
$6x-6=30$
$6x=36$
$x=6$

Find the missing side of each triangle. Round your answers to the nearest tenth if necessary.

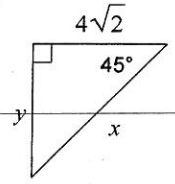
14)



$x^2=9.4^2+10.4^2$
$x^2=88.36+108.16$
$x^2=196.52$
$x\approx 14$ ft

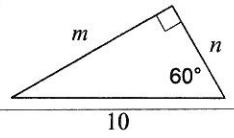
Find the missing side lengths. Leave your answers as radicals in simplest form.

15)



$x=4\sqrt{2}\cdot\sqrt{2}=8$
$y=4\sqrt{2}$

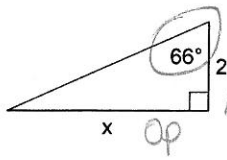
16)



$n=5$
$m=5\sqrt{3}$

Find the missing side. Round to the nearest tenth.

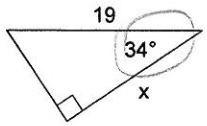
17)



Op Adj

$\tan 66=\frac{x}{20}$
$x=20\tan 66$
$x=44.9$

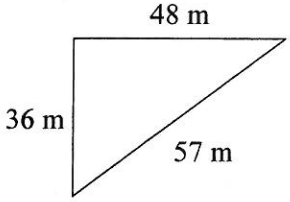
18)



$\cos 34=\frac{x}{19}$
$x=19\cos 34$
$x=15.8$

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

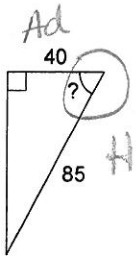
19)



$36^2+48^2 \square 57^2$
$1296+2304 \square 3249$
$3600 \square 3249$
Acute

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

20)

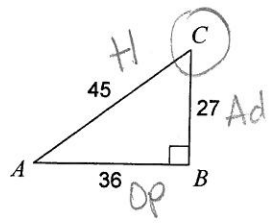


Ad Op H

$\cos x=\frac{40}{85}$
$x\approx 61.9°$
$62°$

Find the value (fraction) of each trigonometric ratio.

21) sin C

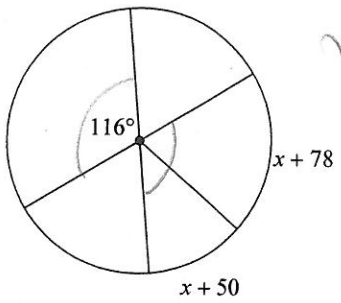


H Ad Op

$\frac{36}{45} = \frac{4}{5}$

Solve for x. Assume that lines which appear to be diameters are actual diameters.

22)



Vert.

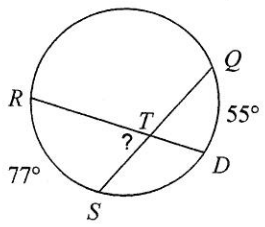
$2x + 128 = 116$

$2x = -12$

$x = -6$

Find the measure of the arc or angle indicated. Assume that lines which appear tangent are tangent.

23)



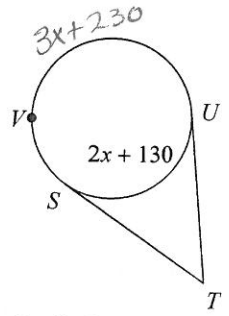
$\frac{77+55}{2} = x$

$\frac{132}{2} = x$

$x = 66°$

24) $m\widehat{SVU} = 3x + 230$

Find $m\widehat{SVU}$



$3x + 230 + (2x + 130) = 360$

$5x + 360 = 360$

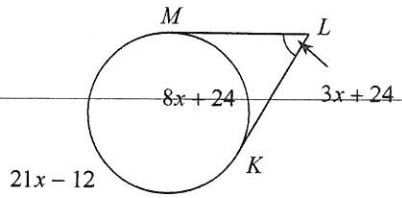
$5x = 0$

$x = 0$

$m\widehat{SVU} = 230°$

Solve for x. Assume that lines which appear tangent are tangent.

25)



$\frac{(21x-12)-(8x+24)}{2} = 3x+24$

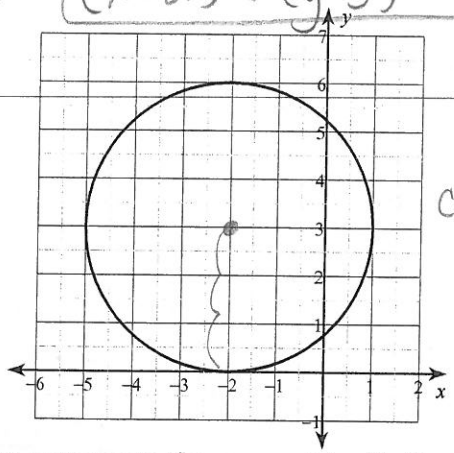
$13x - 36 = 6x + 48$

$7x = 84$

$x = 12$

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

26) $(x+2)^2 + (y-3)^2 = 9$

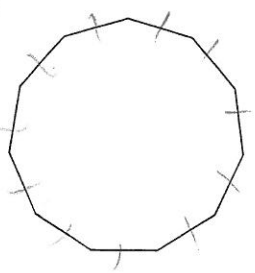


center $(-2, 3)$

$r = 3$

Find the interior angle sum for each polygon. Round your answer to the nearest tenth if necessary.

27)



$(11-2)(180)$

$1620°$

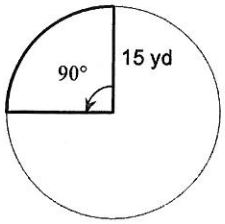
28) Two similar polygons have areas 36 and 81. Find the scale factor.

$\frac{36}{81} = \frac{4}{9}$

$SF = \frac{2}{3}$

Find the area of each sector. Round your answers to the nearest tenth.

29)

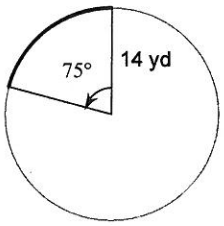


$\frac{90}{360} \cdot \pi \cdot 15^2$

$176.7\ yd^2$

Find the length of each arc. Round your answers to the nearest tenth.

30)

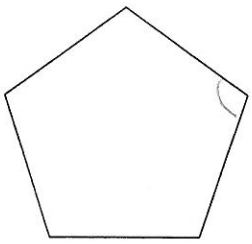


$\frac{75}{360} \cdot 2 \cdot \pi (14)$

$18.3\ yd$

Find the measure of one interior angle in each polygon. Round your answer to the nearest tenth if necessary.

31)



$\frac{(5-2)180}{5} = \frac{540}{5} = 108°$

32) Two similar polygons have a scale factor of 4 : 5. The area of the larger polygon is 200 m^2. Find the area of the smaller polygon.

$\frac{4}{5} \rightarrow$ area $\frac{16}{25} = \frac{x}{200}$

$25x = 3200$

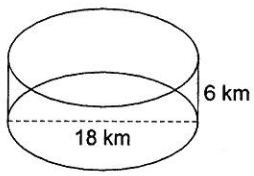
$x = 128\ m^2$

33) Two similar polygons have a scale factor of 2:3. If the smallest angle of the smaller polygon is 40 degrees, what is the measure of the smallest angle of the larger polygon?

$\frac{2}{3}$ angles stay the same. $40°$

Find the surface area of each figure. Round your answers to the nearest hundredth, if necessary.

34)



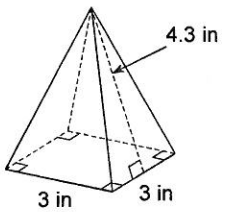
$2\pi r^2 + 2\pi rh$

$2\pi (9)^2 + 2\pi (9)(6)$

$508.94 + 339.29$

$848.23\ km^2$

35)



$B + 4\triangle$

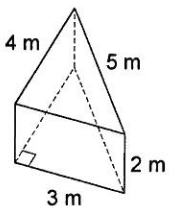
$(9) + 4\left[\frac{1}{2} \cdot 3 \cdot 4.3\right]$

$9 + 4(6.45)$

$34.8\ in^2$

Find the volume of each figure. Round your answers to the nearest hundredth, if necessary.

36)

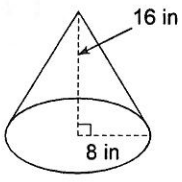


$B \cdot h$

$\frac{1}{2}(3.4)(2)$

$= 12\ m^3$

37)



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

$\frac{1}{3}\pi (8^2)(16)$

$1072.33\ in^3$