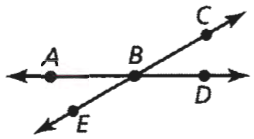
Name Answers Date

Review – Special Pairs of Angles

Name two pairs of adjacent angles and two pairs of vertical angles in the figure.

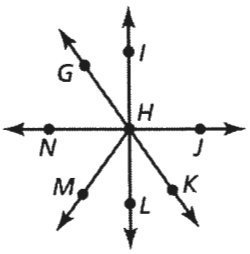
1)



∠ABC + ∠CBD
∠ABE + ∠EBD

∠ABC + ∠EBD
∠ABE + ∠CBD

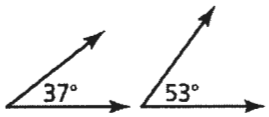
2)



A lot...

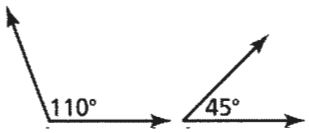
Tell whether the angles are *complementary*, *supplementary*, or *neither*.

3)



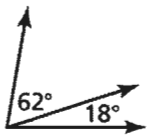
~~Neither~~ Complementary

4)



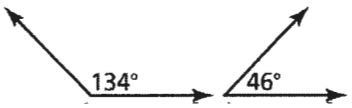
Neither

5)



Neither

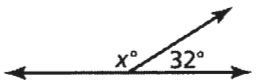
6)



Supplementary

Tell whether the angles are *complementary, supplementary* or *vertical*. Then find the value of x. Show all algebraic work if

7)

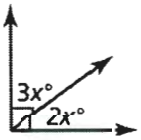


Supplementary
$x + 32 = 180$
$-32 \quad -32$
$x = 148°$

8)

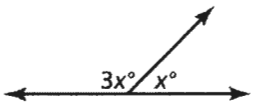
Vertical
$x = 142°$

9)

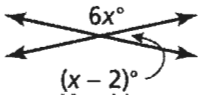


Complementary
$3x + 2x = 90$
$\frac{5x}{5} = \frac{90}{5}$
$x = 18$

10)



Supplementary
$3x + x = 180$
$\frac{4x}{4} = \frac{180}{4}$
$x = 45$

11) 

Supplementary

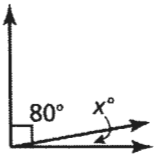
$6x + (x-2) = 180$

$7x - 2 = 180$

$+2 \quad +2$

$7x = 182$

$\boxed{x = 26°}$

12) 

Complementary

$x + 80 = 90$

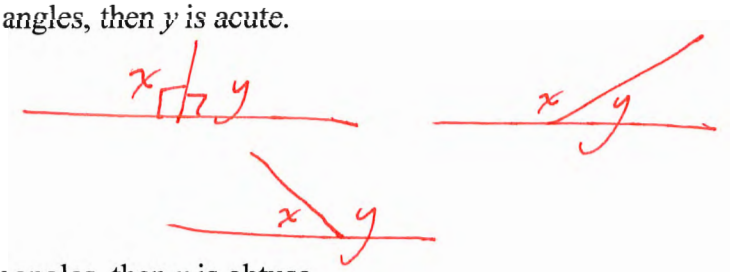
$-80 \quad -80$

$\boxed{x = 10}$

Tell whether the statement is *always*, *sometimes*, or *never* true. Explain.

13) If x and y are supplementary angles, then y is acute.

Sometimes.



14) If x and y are complementary angles, then x is obtuse.

Never. Complementary angles add up to 90°. However, obtuse angles are greater than 90°

15) Angle x and angle y are complementary. Angle x is supplementary to a 128° angle. What are the measures of angle x and angle y?

$x + 128 = 180$

$-128 \quad -128$

$\boxed{x = 52°}$

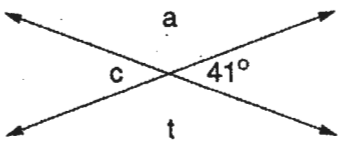
$x + y = 90$

$52 + y = 90$

$-52 \quad -52$

$\boxed{y = 38°}$

16) Find all the missing angles.



$m\angle a = 139°$

$m\angle c = 41°$

$m\angle t = 139°$

pp. 506-507 #5-13, 15-16, 21-24, 30

5. *Sample answer:* adjacent: $\angle FGH$ and $\angle HGJ$, $\angle FGK$ and $\angle KGJ$; vertical: $\angle FGH$ and $\angle JGK$, $\angle FGK$ and $\angle JGH$

6. *Sample answer:* adjacent: $\angle SML$ and $\angle LMN$, $\angle SMR$ and $\angle RMQ$; vertical: $\angle NMP$ and $\angle SMR$, $\angle LMN$ and $\angle RMQ$

7. $\angle ACB$ and $\angle BCD$ are adjacent angles, not vertical angles.

8. adjacent; 55

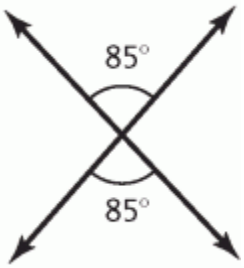
9. vertical; 128

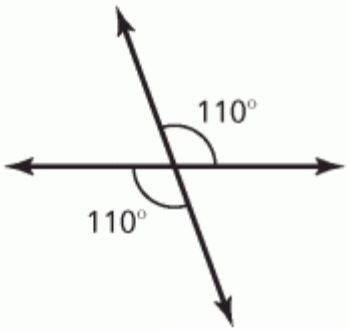
10. adjacent; 63

11. vertical; 25

12. adjacent; 15

13. adjacent; 20

15. 

16. 

21. never

22. always

23. sometimes

24. always

30. B

pp. 512-513 #6-8, 12-14, 16, 24, 26, 28-30

6. neither

7. complementary

8. complementary

12. complementary; 15

13. complementary; 55

14. supplementary; 31

16. 53

24. yes; *Sample answer:* $\angle LMQ$ is a straight angle. By removing $\angle NMP$, the remaining two angles ($\angle LMN$ and $\angle PMQ$) have a sum of 90°.

26. See *Taking Math Deeper*.

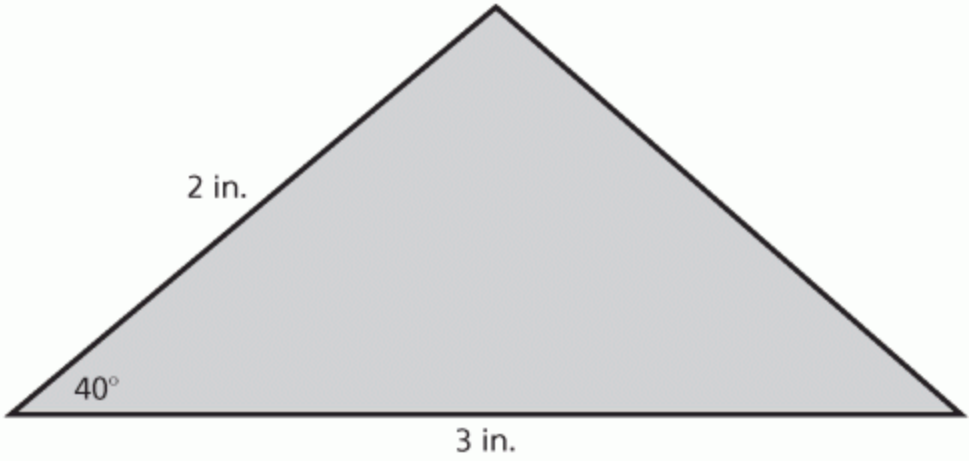
28. $x = -15$

29. $n = -\frac{5}{12}$

30. $y = -9.3$

pp. 518-519 #6-12, 15, 17, 27-30

6. right isosceles
7. equilateral equiangular
8. obtuse isosceles
9. right scalene
10. acute scalene
11. obtuse scalene
12. The triangle is not an acute triangle because acute triangles have 3 angles less than 90°. The triangle is an obtuse scalene triangle because it has one angle greater than 90° and no congruent sides.
15. 

obtuse scalene triangle
17. 

27. a. green: 65; purple: 25; red: 45

    b. The angles opposite the congruent sides are congruent.

    c. An isosceles triangle has at least two angles that are congruent.

28. yes; The equation can be written as $y = kx$ where $k = \frac{1}{2}$.

29. no; The equation cannot be written as $y = kx$.

30. no; The equation cannot be written as $y = kx$.

pp. 322-323 #6-9, 13, 15-17, 19-20, 24, 30

6. yes

7. no

8. no

9. yes

13. $\sqrt{29}$

15. $\sqrt{85}$

16. 25

17. The squared quantities under the radical should be added not subtracted; $2\sqrt{34}$

19. yes

20. no

24. yes; $\sqrt{58}$; Because you square the differences $(x_2 - x_1)$ and $(y_2 - y_1)$, it does not matter if the differences are positive or negative. The squares of opposite numbers are equivalent.

30. B

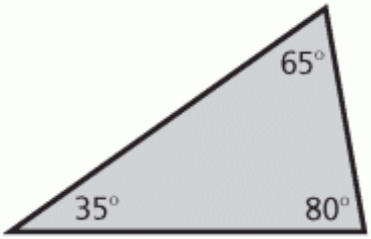
p. 523 #1, 3, 6, 8, 11; p. 324 #13, 15, 21

1. *Sample answer:*
adjacent: $\angle PQR$ and $\angle RQS$, $\angle PQT$ and $\angle TQS$;
vertical: $\angle PQR$ and $\angle TQS$, $\angle PQT$ and $\angle RQS$

3. adjacent; 146

6. supplementary; 50

8.



11. 115; obtuse scalene

13. no

15. $2\sqrt{5}$

21. 5.8 km

p. 523 #2, 4-5, 7, 9-10, 12-14; p. 324 #14, 16-17, 23-24

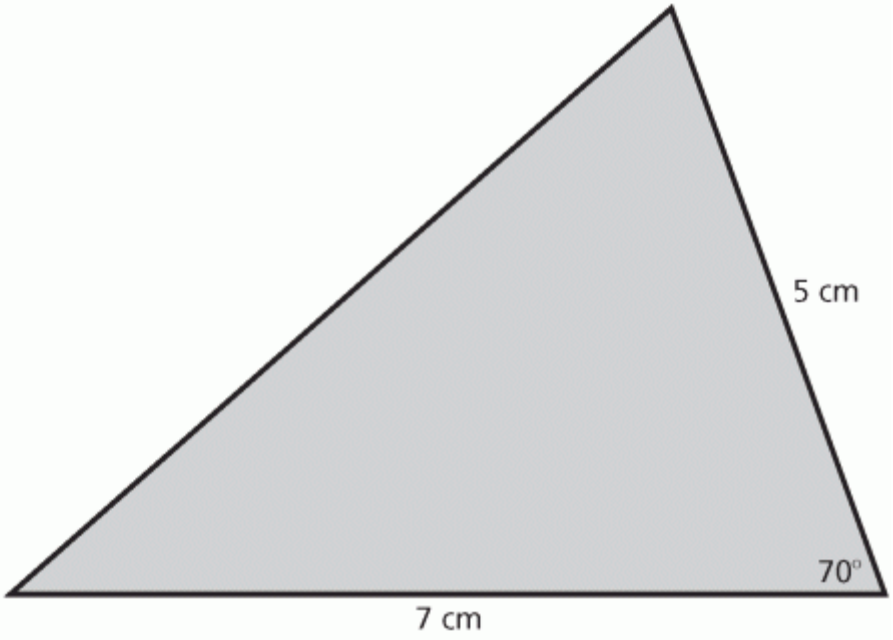
2. *Sample answer:*
adjacent: $\angle YUZ$ and $\angle ZUV$, $\angle ZUV$ and $\angle VUW$;
vertical: $\angle YUX$ and $\angle VUW$, $\angle YUV$ and $\angle XUW$

4. adjacent; 16

5. vertical; 49

7. complementary; 24

9.



10.

12. 45; right isosceles

13. 80; equilateral equiangular

14. Use vertical angles to find that the measure of $\angle 2$ is $115°$. Use supplementary angles to find that the measure of $\angle 3$ is $65°$. Then use supplementary angles to find that the measure of $\angle 2$ is $115°$.

14. yes

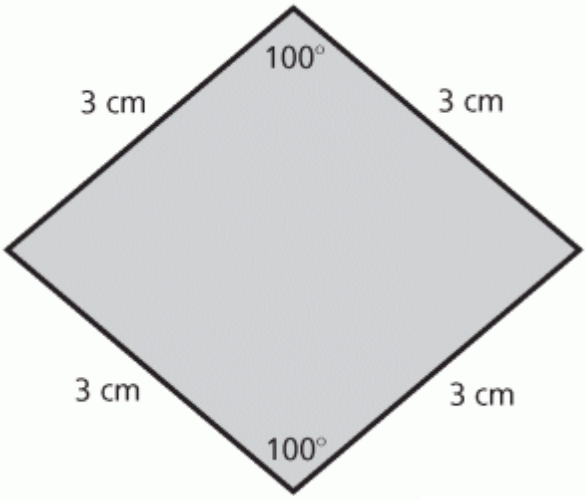
16. $\sqrt{82}$

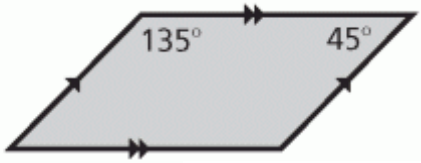
17. $3\sqrt{2}$

23. 7.1 km

24. 11.7 km

pp. 528-529 #4-12, 15-16, 18-23, 26

4. square
5. trapezoid
6. rhombus
7. kite
8. parallelogram
9. rectangle
10. 65
11. 110
12. 128
15. 

16. 

18. always
19. always
20. sometimes
21. never
22. never
23. sometimes

26. **a.** $x = 125; y = 55$

b. Opposite angles of a parallelogram are equal.

c. Consecutive interior angles of a parallelogram are supplementary.

pp. 535-536 #10-17, 19, 22

10. 200 mi

11. 110 mi

12. 75 in.

13. 15 in.

14. 3.84 m

15. 21.6 yd

16. 17.5 mm

17. The 5 cm should be in the numerator.

$$\frac{1\text{ cm}}{20\text{ m}} = \frac{5\text{ cm}}{x\text{ m}}$$

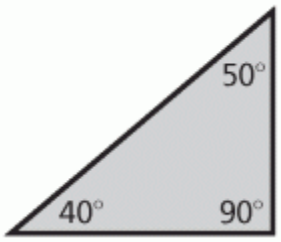
$$x = 100\text{ m}$$

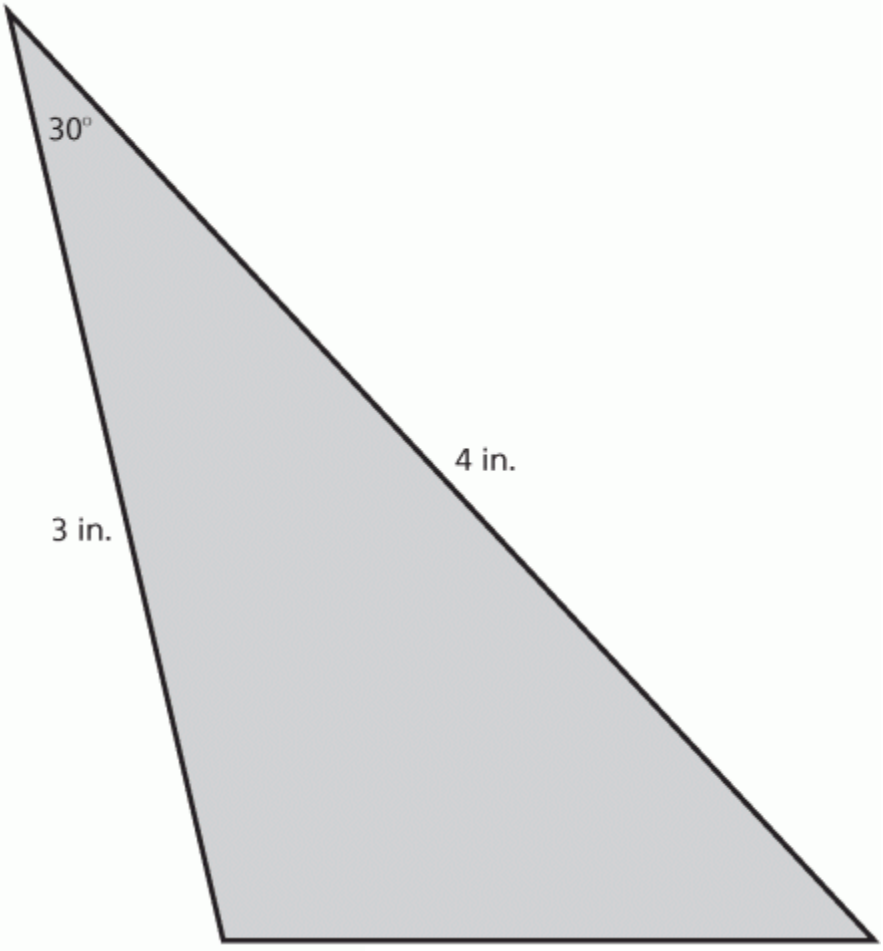
19. 2.4 cm; 1 cm : 10 mm

22. **a.** 30 cm; 31.25 cm^2

b. 9600 m; 3,200,000 m^2

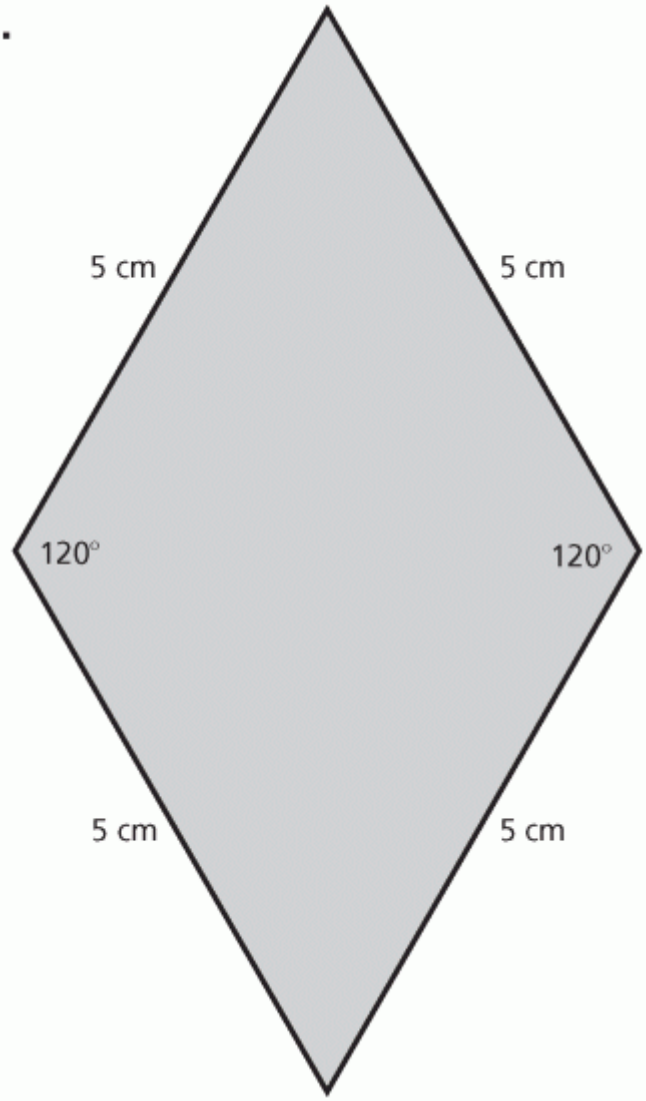
pp. 539-541 #1-13; p. 327 #24-27

1. adjacent; 21
2. vertical; 81
3. complementary; 10
4. supplementary; 34
5. 

6. 

7. 41; right scalene
8. 23; isosceles obtuse
9. 52
10. 147

11.



12. 6 cm; 1 cm : 5 in.

13. 2.5 cm; 1 cm : 3 in.

24. yes

25. no

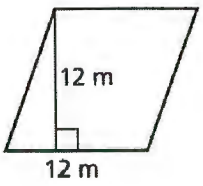
26. $5\sqrt{5}$

27. $\sqrt{113}$

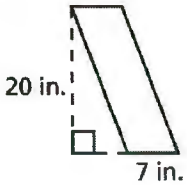
Name Answers Date

Geometry – Area of Polygons

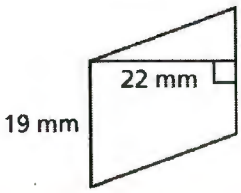
Find the area of each polygon. Show all necessary work.

1) 

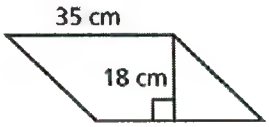
$A = bh$
$= 12 \times 12$
$= 144 m^2$

2) 

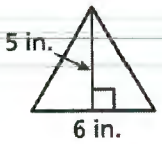
$A = bh$
$= 7 \times 20$
$= 140 in^2$

3) 

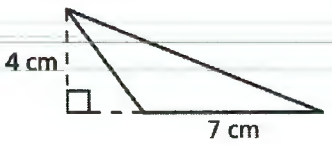
$A = bh$
$= 19 \times 22$
$= 418 mm^2$

4) 

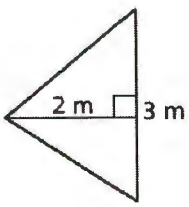
$A = bh$
$= 35 \times 18$
$= 630 cm^2$

5) 

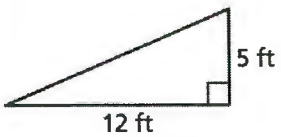
$A = \frac{1}{2} bh$
$= \frac{1}{2} \cdot 6 \cdot 5$
$= \frac{1}{2} \cdot 30$
$= 15 in^2$

6) 

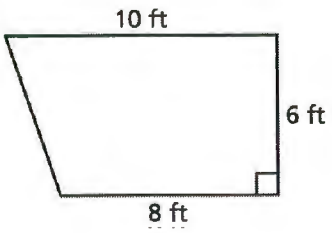
$A = \frac{1}{2} bh$
$= \frac{1}{2} \cdot 7 \cdot 4$
$= \frac{1}{2} \cdot 28$
$= 14 cm^2$

7) 

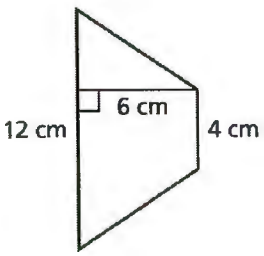
$A = \frac{1}{2} bh$
$= \frac{1}{2} \cdot 3 \cdot 2$
$= \frac{1}{2} \cdot 6$
$= 3 m^2$

8) 

$A = \frac{1}{2} bh$
$= \frac{1}{2} \cdot 12 \cdot 5$
$= \frac{1}{2} \cdot 60$
$= 30 ft^2$

9) 

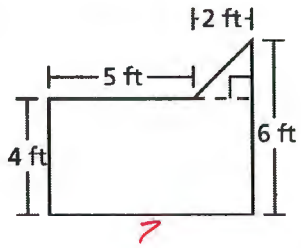
$A = \frac{1}{2}(b_1 + b_2)h$
$= \frac{1}{2}(10 + 8) 6$
$= \frac{1}{2}(18) 6$
$= \frac{1}{2} \cdot 108$
$= 54 ft^2$

10) 

$A = \frac{1}{2}(b_1 + b_2)h$
$= \frac{1}{2}(4 + 12) 6$
$= \frac{1}{2}(16) 6$
$= \frac{1}{2} \cdot 96$
$= 48 cm^2$

Find the area of the figure. Show all work.

11)



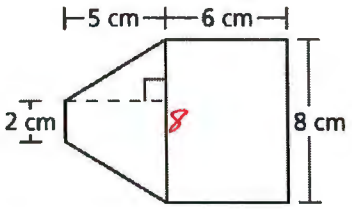
$A = bh$ $= 7 \times 4$ $= 28$

$A = \frac{1}{2}bh$ $= \frac{1}{2} \cdot 2 \cdot 2$ $= 2$

Total Area $= 28 + 2$

$= 30 ft^2$

12)



$A = \frac{1}{2}(b_1 + b_2)h$ $= \frac{1}{2}(2+8)5$ $= \frac{1}{2}(10)5$ $= \frac{1}{2} \cdot 50$ $= 25$

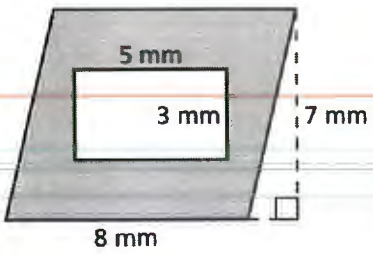
$A = bh$ $= 8 \times 6$ $= 48$

Total Area $= 25 + 48$

$= 73 cm^2$

Find the area of the shaded region.

13)



$A = bh$ $= 8 \times 7$ $= 56$

$A = bh$ $= 5 \times 3$ $= 15$

shaded region $= 56 - 15$

$= 41 mm^2$

Complete the following.

14) The area of a parallelogram is 54 m^2. What is the measure of its base if the height of it is 6 m.

$A = bh$

$\frac{54}{6} = \frac{b \cdot 6}{6}$

$9m = b$

15) The area of a triangle is 54 m^2. What is the measure of its base if the height of it is 6 m.

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

$54 = \frac{1}{2} \cdot b \cdot 6$

$\frac{54}{3} = \frac{3b}{3}$

$18 m^2 = b$

16) The area of a trapezoid is is 126 m^2. What is the measure of its height if the measures of its bases are 6m and 12 m.

$A = \frac{1}{2}(b_1 + b_2)h$

$126 = \frac{1}{2}(6+12)h$

$126 = \frac{1}{2}(18)h$

$\frac{126}{9} = \frac{9h}{9}$

$14\,m = h$

17) The area of a trapezoid is is 9 m^2 and its height is 3 m. If one of the bases has a measure of 2 m, what is the measure of the other base?

$A = \frac{1}{2}(b_1 + b_2)h$

~~$9 = \frac{1}{2}(2 + b_2)3$~~

$2 \cdot 9 = \frac{1}{2}(2+b_2)3 \cdot 2$

$\frac{18}{3} = \frac{(2+b_2)3}{3}$

$6 = 2 + b_2$

$-2 \quad -2$

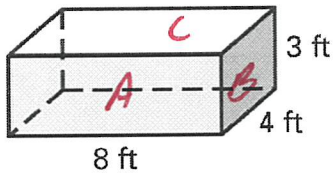
$4 = b_2$ 4m

Name Answers Date

14.1 – Surface Area of Prisms

Find the surface area of each prism.

1)



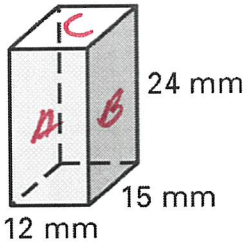
$A = 24 \times 2 = 48$

$B = 12 \times 2 = 24$

$C = 32 \times 2 = 64$

$136 ft^2$

2)



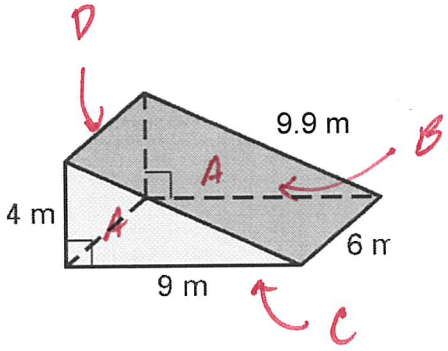
$A = 288 \times 2 = 576$

$B = 360 \times 2 = 720$

$C = 180 \times 2 = 360$

$1656 mm^2$

3)



$A = 18 \times 2 = 36$

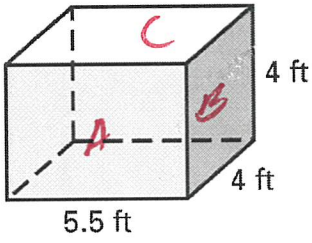
$B = 59.4$

$C = 54$

$D = 24$

$173.4 m^2$

4)



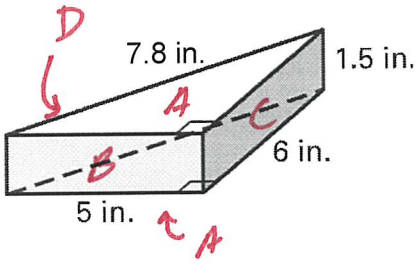
$A = 22 \times 2 = 44$

$B = 16 \times 2 = 32$

$C = 22 \times 2 = 44$

$120 ft^2$

5)



$A = 15 \times 2 = 30$

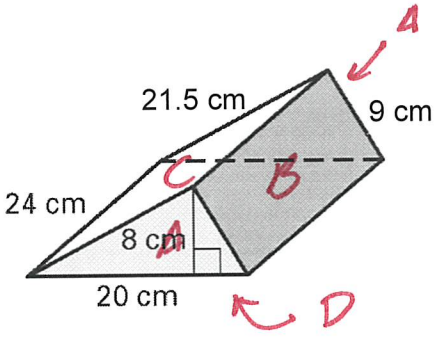
$B = 7.5$

$C = 9$

$D = 11.7$

58.2 in^2

6)



$A = 80 \times 2 = 160$

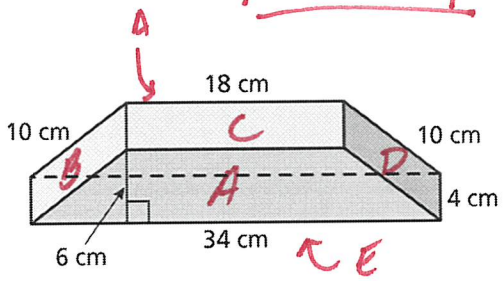
$B = 216$

$C = 516$

$D = 480$

1372 cm^2

7)



$A = \frac{1}{2}(18+34)6 \times 2 = 312$

$B = 40$

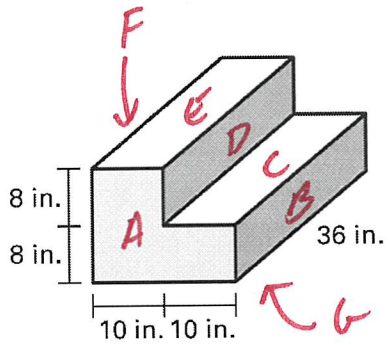
$C = 72$

$D = 40$

$E = 136$

600 cm^2

8)



$A = 240 \times 2 = 480$

$B = 288$

$C = 360$

$D = 288$

$E = 360$

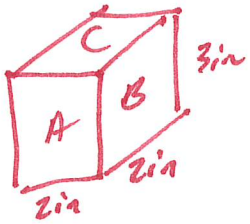
$F = 576$

$G = 720$

3072 in^2

Make a sketch of the rectangular prism with the given dimensions. Then find its surface area.

9) length = 2 in., width = 2 in., height = 3 in.



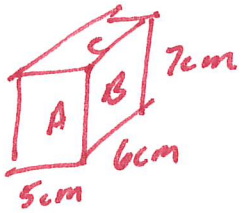
$A = 6 \times 2 = 12$

$B = 6 \times 2 = 12$

$C = 4 \times 2 = 8$

32 in^2

10) length = 5 cm, width = 6 cm, height = 7 cm



$A = 35 \times 2 = 70$

$B = 42 \times 2 = 84$

$C = 30 \times 2 = 60$

214 cm^2

Name Answers Date

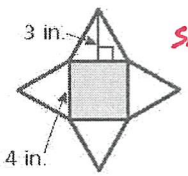
14.2 – Surface Area of Pyramids

1) What is the slant height in a pyramid?

It is the height of one of the lateral triangles.

Use the net to find the surface area of the regular pyramid.

2)



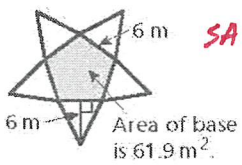
$SA = 4\left(\frac{1}{2} \cdot 4 \cdot 3\right) + 4(4)$

$= 4(6) + 16$

$= 24 + 16$

$= \boxed{40 \text{ in}^2}$

3)



$SA = 5\left(\frac{1}{2} \cdot 6 \cdot 6\right) + 61.9$

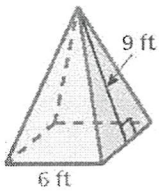
$= 5(18) + 61.9$

$= 90 + 61.9$

$= \boxed{151.9 \text{ m}^2}$

Find the surface area of the regular pyramid.

4)



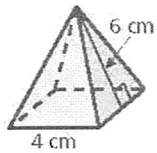
$SA = 4\left(\frac{1}{2} \cdot 6 \cdot 9\right) + 6(6)$

$= 4(27) + 36$

$= 108 + 36$

$= \boxed{144 \text{ ft}^2}$

5)



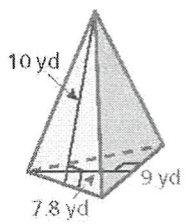
$SA = 4\left(\frac{1}{2} \cdot 4 \cdot 6\right) + 4(4)$

$= 4(12) + 16$

$= 48 + 16$

$= \boxed{64 \text{ cm}^2}$

6)



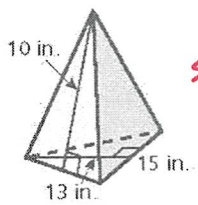
$SA = 3\left(\frac{1}{2} \cdot 9 \cdot 10\right) + \left(\frac{1}{2} \cdot 9 \cdot 7.8\right)$

$= 3(45) + 35.1$

$= 135 + 35.1$

$= \boxed{170.1 \text{ yd}^2}$

7)



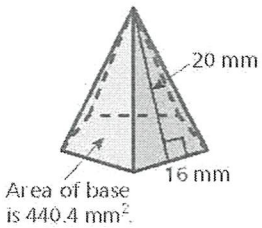
$SA = 3\left(\frac{1}{2} \cdot 15 \cdot 10\right) + \left(\frac{1}{2} \cdot 15 \cdot 13\right)$

$= 3(75) + 97.5$

$= 225 + 97.5$

$= \boxed{322.5 \text{ in}^2}$

8)



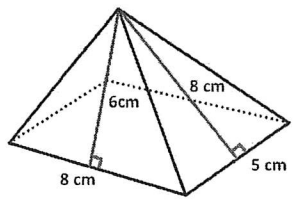
$SA = 5(\frac{1}{2} \cdot 16 \cdot 20) + 440.4$

$= 5(160) + 440.4$

$= 800 + 440.4$

$= \boxed{1240.4 \text{ mm}^2}$

9) Find the surface area of this rectangular pyramid.



$SA = 2(\frac{1}{2} \cdot 8 \cdot 6) + 2(\frac{1}{2} \cdot 5 \cdot 8) + (8 \cdot 5)$

$= 2(24) + 2(20) + 40$

$= 48 + 40 + 40$

$= \boxed{128 \text{ cm}^2}$

10) The surface area of a square pyramid is 85 m^2. The base length is 5 meters. What is the slant height?

$SA = 4(\frac{1}{2} \cdot 5 \cdot h) + (5 \cdot 5)$

$85 = 4(\frac{1}{2} \cdot 5 \cdot h) + 25$

$60 = 4(\frac{1}{2} \cdot 5 \cdot h)$

$15 = \frac{1}{2} \cdot 5 \cdot h$

$30 = 5 \cdot h$

$\boxed{6m = h}$

11) The surface area of a regular pentagonal pyramid is 125 square yards. The base length is 5 yards. The area of the base is 37.5 square yards. What is the slant height of the pyramid?

$SA = 5(\frac{1}{2} \cdot 5 \cdot h) + 37.5$

$125 = 5(\frac{1}{2} \cdot 5 \cdot h) + 37.5$

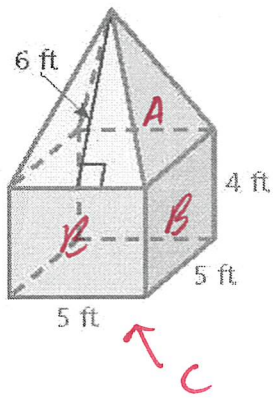
$87.5 = 5(\frac{1}{2} \cdot 5 \cdot h)$

$17.5 = \frac{1}{2} \cdot 5 \cdot h$

$35 = 5 \cdot h$

$\boxed{7m = h}$

12) Find the surface area.



$SA = 4(\frac{1}{2} \cdot 5 \cdot 6) + 4(4 \cdot 5) + (5 \cdot 5)$

$= 4(15) + 4(20) + 25$

$= 60 + 80 + 25$

$= \boxed{165 \text{ ft}^2}$

Name Answers Date

14.3 – Surface Area of Cylinders

1) What is the formula that will help you find the surface area of a cylinder?

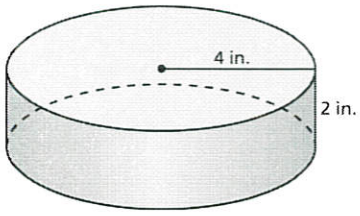
$SA = 2\pi r^2 + \pi dH$ or $SA = 2\pi r^2 + 2\pi rH$

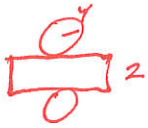
2) If you are given the height and the circumference of the base of a cylinder. Describe how to find the surface area of the entire cylinder.

To figure out the area of the lateral surface, you multiply the height and the circumference. Since one formula of the circumference is $C = 2\pi r$, you can calculate the radius from just the given circumference. Once you have the radius, you can then find the area of the two circle bases. Lastly, add the circles with the lateral surface.

Make a net for the cylinder. Then find the surface area of the cylinder. Round your answer to the nearest tenth. SHOW ALL WORK.

3)





$SA = 2\pi r^2 + \pi dH$

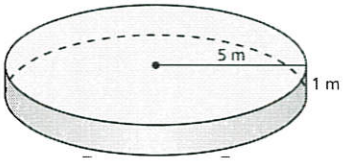
$= 2 \cdot 3.14 \cdot 4^2 + 3.14 \cdot 8 \cdot 2$

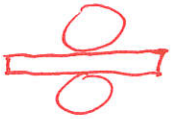
$= 100.48 + 50.24$

$= 150.72$

$\approx \boxed{150.7 \text{ in}^2}$

4)





$SA = 2\pi r^2 + \pi dH$

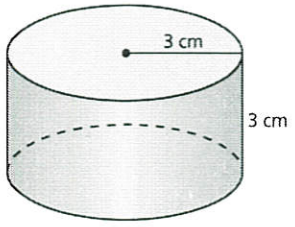
$= 2 \cdot 3.14 \cdot 5^2 + 3.14 \cdot 10 \cdot 1$

$= 157 + 31.4$

$= \boxed{188.4 \text{ m}^2}$

Find the lateral surface area of the cylinder. Round your answer to the nearest tenth. SHOW ALL WORK.

5)



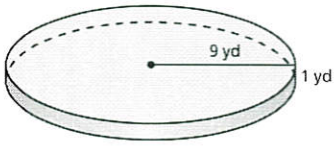
$SA = \pi dH$

$= 3.14 \times 6 \times 3$

$= 56.52$

$\approx \boxed{56.5 \text{ cm}^2}$

6)



$SA = \pi dH$

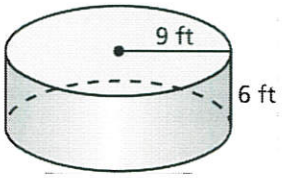
$= 3.14 \times 18 \times 1$

$= 56.52$

$\approx \boxed{56.5 \text{ cm}^2}$

Find the surface area of the cylinder. Round your answer to the nearest tenth. SHOW ALL WORK.

7)



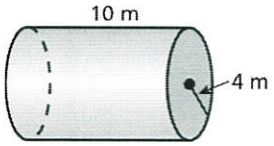
$SA = 2\pi r^2 + \pi dH$

$= 2 \times 3.14 \times 9^2 + 3.14 \times 18 \times 6$

$= 508.68 + 339.12$

$= \boxed{847.8 \text{ ft}^2}$

8)



$SA = 2\pi r^2 + \pi dH$

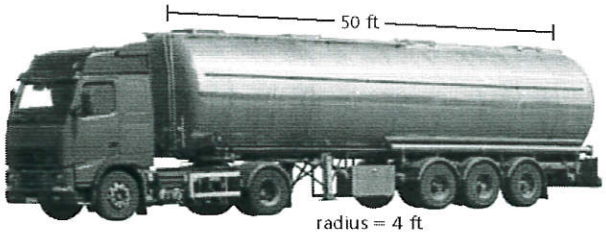
$= 2 \times 3.14 \times 4^2 + 3.14 \times 8 \times 10$

$= 100.48 + 251.2$

$= \boxed{351.68 \text{ m}^2}$

$\approx \boxed{351.7 \text{ m}^2}$

9) The truck's tank is a stainless steel cylinder. Find the surface area of the tank. SHOW ALL WORK.



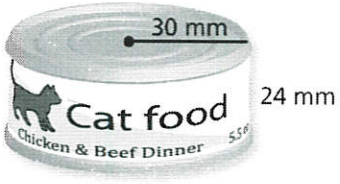
$SA = 2\pi r^2 + \pi dH$

$= 2 \times 3.14 \times 4^2 + 3.14 \times 8 \times 50$

$= 100.48 + 1256$

$= \boxed{1356.48 \text{ ft}^2}$

10) How much paper is used in the label for the can of cat food? Round your answer to the nearest whole number. SHOW ALL WORK.



$SA = \pi dH$

$= 3.14 \times 60 \times 24$

$= \boxed{4521.6 \text{ mm}^2}$

pp. 338-339 #9-15, 18

9. $252\pi \approx 791.7 \text{ in.}^3$

10. $\frac{1125}{4}\pi \approx 883.6 \text{ m}^3$

11. $256\pi \approx 804.2 \text{ cm}^3$

12. about 6032 gal

13. $\frac{125}{8\pi} \approx 5 \text{ ft}$

14. $\frac{625}{16} \approx 39 \text{ in.}$

15. $\sqrt{\frac{150{,}000}{19\pi}} \approx 50 \text{ cm}$

18. about 4712 lb

pp. 344-345 #10-17, 20, 23, 25

10. $\frac{112\pi}{3} \approx 117.3 \text{ ft}^3$

11. $\frac{125\pi}{6} \approx 65.4 \text{ in.}^3$

12. $\frac{32\pi}{3} \approx 33.5 \text{ cm}^3$

13. The diameter was used instead of the radius;

$V = \frac{1}{3}(\pi)(1)^2(3) = \pi \text{ m}^3$

14. Glass A; $\frac{38\pi}{3} \approx 39.8 \text{ cm}^3$

15. 1.5 ft

16. $\frac{27}{\pi} \approx 8.6 \text{ cm}$

17. $2\sqrt{\frac{10.8}{4.2\pi}} \approx 1.8 \text{ in.}$

20. See *Taking Math Deeper.*

23. $A'(-1, 1), B'(-3, 4), C'(-1, 4)$

25. D

pp. 352-353 #6-11, 15-16, 21-23 Answer Presentation Tool

6. $288\pi \approx 904.8 \text{ yd}^3$

7. $36\pi \approx 113.1 \text{ cm}^3$

8. $\frac{10{,}976\pi}{3} \approx 11{,}494.0 \text{ m}^3$

9. 9 mm

10. 1.5 cm

11. 4.5 ft

15. $256\pi + 128\pi = 384\pi \approx 1206.4 \text{ ft}^3$

16. $99\pi - 18\pi = 81\pi \approx 254.5 \text{ in.}^3$

21. enlargement; 2

22. reduction; $\frac{1}{3}$

23. A

pp. 359-361 #5-9, 11-12, 14, 21

5. no

6. yes

7. no

8. 25 in.

9. $b = 18$ m
$c = 19.5$ m
$h = 9$ m

11. 1012.5 in.^{2}

12. 196 mm^3

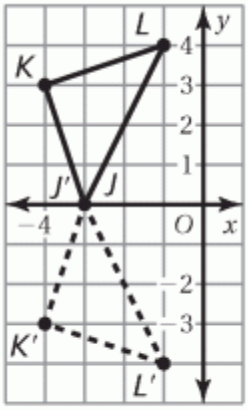
14. The ratio of the volumes of two similar solids is equal to the cube of the ratio of their corresponding linear measures.

$$\frac{108}{V} = \left(\frac{3}{5}\right)^3$$

$$\frac{108}{V} = \frac{27}{125}$$

$$V = 500 \text{ in.}^3$$

21.



$J'(-3, 0), K'(-4, -3), L'(-1, -4)$

p. 347 #1-10; p. 362 #1-9 odd

1. $14\pi \approx 44.0 \text{ yd}^3$
2. $36\pi \approx 113.1 \text{ ft}^3$
3. $50\pi \approx 157.1 \text{ cm}^3$
4. $132\pi \approx 414.7 \text{ in.}^3$
5. $\frac{340}{9\pi} \approx 12.0 \text{ ft}$
6. $\sqrt{\frac{2814}{4.7\pi}} \approx 13.8 \text{ cm}$
7. $\frac{28.26}{\pi} \approx 9 \text{ cm}$
8. The volume is 27 times greater.
9. about 42.45 in.^3
10. 13.5 in.

1. $\frac{2048\pi}{3} \approx 2144.7 \text{ in.}^3$
3. 15 yd
5. $768\pi + 192\pi = 960\pi$
   $\approx 3015.9 \text{ ft}^3$
7. $w = 2.5$ in.
   $h = 5$ in.
9. $\frac{32\pi}{3} \approx 34 \text{ cm}^3$

pp. 612-613 #7-8, 11, 13-14, 20-21

7. $210\ \text{yd}^3$

8. $121.5\ \text{ft}^3$

11. $645\ \text{mm}^3$

13. The area of the base is wrong.

$$V = \frac{1}{2}(7)(5) \cdot 10$$

$$= 175\ \text{cm}^3$$

14. The gym locker has more storage space because it has a greater volume.

20. 48 packets

21. 20 cm

pp. 618-619 #8-9, 11, 13-16, 21-24

8. $7\ \text{cm}^3$

9. $252\ \text{mm}^3$

11. $700\ \text{mm}^3$

13. $156\ \text{ft}^3$

14. $240\ \text{m}^3$

15. $340.4\ \text{in.}^3$

16. Spire B; $4\ \text{in.}^3$

21. 153°; 63°

22. 98°; 8°

23. 60°; none

24. C

Name Answers Date

Chapter 14 – Review

Complete the formulas for the following:

Area of a rectangle = lw or bh

Area of a parallelogram = bh

Area of a triangle = $\frac{1}{2}bh$

Area of a trapezoid = $\frac{1}{2}(b_1+b_2)h$

Circumference of a circle = πd

Area of a circle = πr^2

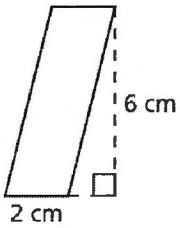
Surface area of a cylinder = $2\pi r^2+\pi dH$

Volume of a prism = BH

Volume of a pyramid = $\frac{1}{3}BH$

Find the areas of the following. Show work (formula and algebraic steps).

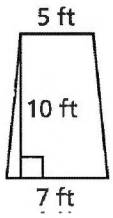
1)



$A=bh$
$=2\times6$
$=12$

A = 12 cm^2

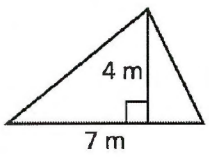
2)



$A=\frac{1}{2}(b_1+b_2)h$
$=\frac{1}{2}(5+7)10$
$=\frac{1}{2}(12)10$
$=60$

A = 60 ft^2

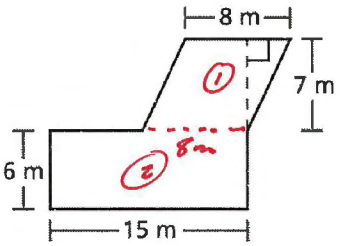
3)



$A=\frac{1}{2}bh$
$=\frac{1}{2}\cdot7\cdot4$
$=14$

A = 14m^2

4)



① $=bh$
$=8\times7$
$=56$

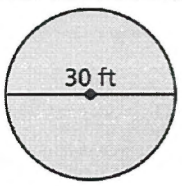
② $=bh$
$=15\times6$
$=90$

Total $=56+90$
$=146$

A = 146m^2

Find the circumference (perimeter) and area of the following. Use 3.14 for π.

5)



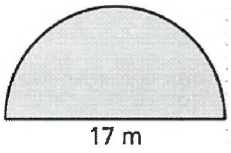
$C=\pi d$
$=3.14\times30$
$=94.2$

$A=\pi r^2$
$=3.14\times15^2$
$=706.5$

C = 94.2 ft

A = 706.5 ft^2

6)



$P = \frac{1}{2}\pi d + d$
$= \frac{1}{2} \cdot 3.14 \cdot 17 + 17$
$= 26.69 + 17$
$= 43.69$

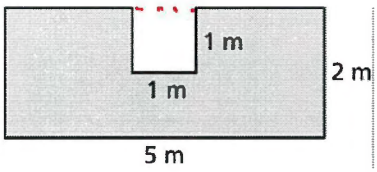
$A = \pi r^2$
$= 3.14 \times 8.5^2$
$= \frac{226.865}{2}$
$= 113.4325$

P = 43.69 m

A = 113.4325 m^2

Find areas of the following. SHOW ALL WORK.

7)



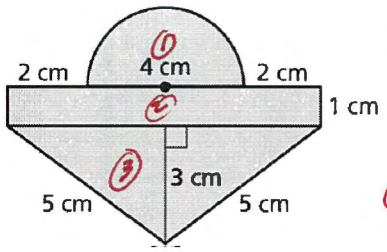
shaded $A = bh$
$= 5 \times 2$
$= 10$

white square $= b \times h$
$= 1 \times 1$
$= 1$

$10 - 1 = 9$

A = 9 m^2

8)



① $= \frac{1}{2}\pi r^2$
$= \frac{1}{2} \times 3.14 \times 2^2$
$= 6.28$

② $= bh$
$= 8 \times 1$
$= 8$

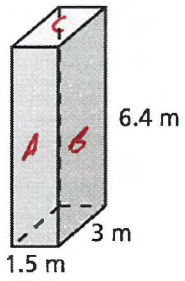
③ $= \frac{1}{2}bh$
$= \frac{1}{2} \times 8 \times 3$
$= 12$

Total $= 6.28 + 8 + 12$
$= 26.28$

A = 26.28 cm^2

Find the surface area AND volume of the prisms. Show work (formula and algebraic steps).

9)



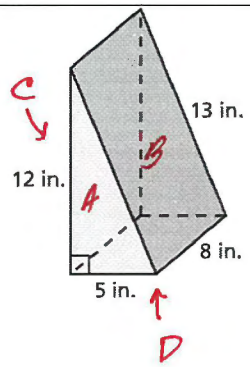
$A = 9.6 \times 2 = 19.2$
$B = 19.2 \times 2 = 38.4$
$C = 4.5 \times 2 = 9$
66.6

SA = 66.6 m^2

$V = BH$
$= lwH$
$= 3 \times 1.5 \times 6.4$
$= 28.8$

V = 28.8 m^3

10)



$A = 30 \times 2 = 60$
$B = 104$
$C = 96$
$D = 40$
300

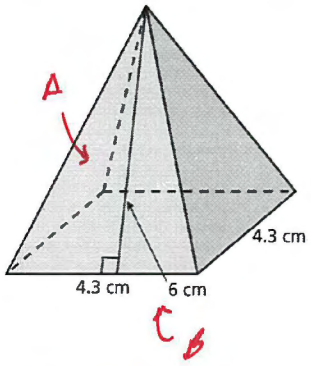
SA = 300 in^2

$V = BH$
$= \frac{1}{2}bh \times H$
$= \frac{1}{2} \times 5 \times 12 \times 8$
$= 30 \times 8$
$= 240$

V = 240 in^3

Find the surface area of the regular pyramids

11)



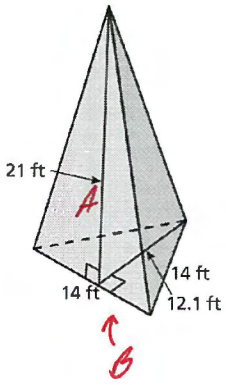
$A = \frac{1}{2}bh$
$= \frac{1}{2} \times 4.3 \times 6$
$= 12.9$

$B = bh$
$= 4.3 \times 4.3$
$= 18.49$

$A = 12.9 \times 4 = 51.6$
$B = 18.49$
70.09

SA = $70.09\ cm^2$

12)



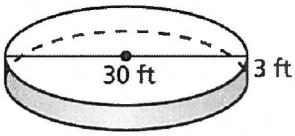
$A = \frac{1}{2}bh$
$= \frac{1}{2} \times 14 \times 21$
$= 147$

$B = \frac{1}{2}bh$
$= \frac{1}{2} \times 14 \times 12.1$
$= 84.7$

$A = 147 \times 3 = 441$
$B = 84.7$
525.7

SA = $525.7\ ft^2$

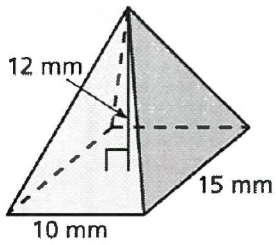
13) Find the surface area of the cylinder. Show work (formula and algebraic steps).



$SA = 2\pi r^2 + \pi d H$
$= 2 \times 3.14 \times 15^2 + 3.14 \times 30 \times 3$
$= 1413 + 282.6$
$= 1695.6$

SA = $1695.$

14) Find the volume of the pyramid.



$V = \frac{1}{3}BH$
$= \frac{1}{3} \times bh \times H$
$= \frac{1}{3} \times 10 \times 15 \times 12$
$= 600$

V = $600\ mm^3$

Find the missing measure. Show work (formula and algebraic steps).

15) The area of a parallelogram is 28 square feet, and its height is 8 feet. What is the measure of the parallelogram's base?

$A = bh$
$28 = b \times 8$
$3.5\ ft = b$

b = $3.5\ ft$

16) Conan believes that a triangle with an area 120 m^2 and a base of 10 meters has a height of 12 meters. Is he correct? Show why or why not.

$A = \frac{1}{2}bh$
$120 = \frac{1}{2} \times 10 \times h$
$\frac{120}{5} = \frac{5h}{5}$
$24 = h$

It should have a height of 24 meters.

17) Alisha told Janice while she was at the post office that the area of a DVD is 19.625 in^2. Will the DVD fit in a 4 inch opening of an envelope?

$A = \pi r^2$

$19.625 = 3.14 \times r^2$

$6.25 = r^2$

$2.5 = r$

$5 = d$

Since the DVD has a diameter of 5 inches, it won't fit in the 4 inch opening.

18) A triangular prism has a volume of 63 cm^3. The height of the prism is 3.5 cm and the measure of the base of the triangle is 9 cm. Find the height of triangular base.

$V = BH$

$V = \frac{1}{2}bh \times H$

$63 = \frac{1}{2} \times 9 \times h \times 3.5$

$63 = 15.75 \times h$

$4cm = h$

pp. 338-339 #9-15, 18

9. $252\pi \approx 791.7 \text{ in.}^3$

10. $\frac{1125}{4}\pi \approx 883.6 \text{ m}^3$

11. $256\pi \approx 804.2 \text{ cm}^3$

12. about 6032 gal

13. $\frac{125}{8\pi} \approx 5 \text{ ft}$

14. $\frac{625}{16} \approx 39 \text{ in.}$

15. $\sqrt{\frac{150{,}000}{19\pi}} \approx 50 \text{ cm}$

18. about 4712 lb

pp. 344-345 #10-17, 20, 23, 25

10. $\frac{112\pi}{3} \approx 117.3 \text{ ft}^3$

11. $\frac{125\pi}{6} \approx 65.4 \text{ in.}^3$

12. $\frac{32\pi}{3} \approx 33.5 \text{ cm}^3$

13. The diameter was used instead of the radius;

$V = \frac{1}{3}(\pi)(1)^2(3) = \pi \text{ m}^3$

14. Glass A; $\frac{38\pi}{3} \approx 39.8 \text{ cm}^3$

15. 1.5 ft

16. $\frac{27}{\pi} \approx 8.6 \text{ cm}$

17. $2\sqrt{\frac{10.8}{4.2\pi}} \approx 1.8 \text{ in.}$

20. See *Taking Math Deeper.*

23. $A'(-1, 1), B'(-3, 4), C'(-1, 4)$

25. D

pp. 352-353 #6-11, 15-16, 21-23 Answer Presentation Tool

6. $288\pi \approx 904.8 \text{ yd}^3$

7. $36\pi \approx 113.1 \text{ cm}^3$

8. $\frac{10{,}976\pi}{3} \approx 11{,}494.0 \text{ m}^3$

9. 9 mm

10. 1.5 cm

11. 4.5 ft

15. $256\pi + 128\pi = 384\pi \approx 1206.4 \text{ ft}^3$

16. $99\pi - 18\pi = 81\pi \approx 254.5 \text{ in.}^3$

21. enlargement; 2

22. reduction; $\frac{1}{3}$

23. A

pp. 359-361 #5-9, 11-12, 14, 21

5. no

6. yes

7. no

8. 25 in.

9. $b = 18$ m
$c = 19.5$ m
$h = 9$ m

11. 1012.5 in.^{2}

12. 196 mm^3

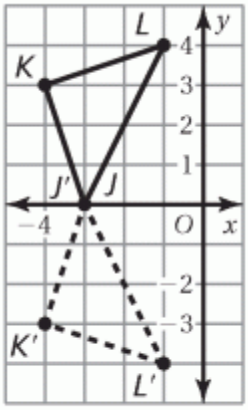
14. The ratio of the volumes of two similar solids is equal to the cube of the ratio of their corresponding linear measures.

$$\frac{108}{V} = \left(\frac{3}{5}\right)^3$$

$$\frac{108}{V} = \frac{27}{125}$$

$$V = 500 \text{ in.}^3$$

21.



$J'(-3, 0), K'(-4, -3), L'(-1, -4)$

Name Answers Date

Unit 4 - Chapter 12 & 14 Review

Terms that you should know:

- ☐ Right Angle
- ☐ Acute Angle
- ☐ Obtuse Angle
- ☐ Adjacent Angles
- ☐ Vertical Angles
- ☐ Complementary Angles
- ☐ Supplementary Angles
- ☐ Right Triangle
- ☐ Acute Triangle
- ☐ Obtuse Triangle
- ☐ Scalene Triangle
- ☐ Isosceles Triangle
- ☐ Equilateral Triangle
- ☐ Equiangular Triangle
- ☐ Trapezoid
- ☐ Kite
- ☐ Parallelogram
- ☐ Rhombus
- ☐ Rectangle
- ☐ Square
- ☐ Scale
- ☐ Scale Factor
- ☐ Legs
- ☐ Hypotenuse

Formulas that you should know:

Area of a rectangle = lw or bh

Area of a parallelogram = bh

Area of a triangle = $\frac{1}{2}bh$

Area of a trapezoid = $\frac{1}{2}(b_1+b_2)h$

Circumference = πd

Area of a circle = πr^2

Surface area of a cylinder = $2\pi r^2 + \pi dH$

Volume of a prism = BH

Volume of a pyramid = $\frac{1}{3}BH$

Volume of a cylinder = BH or $\pi r^2 H$

Volume of a cone = $\frac{1}{3}BH$ or $\frac{1}{3}\pi r^2 H$

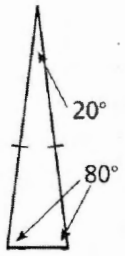
Volume of a Sphere = $\frac{4}{3}\pi r^3$

Pythagorean Theorem: $a^2+b^2=c^2$

Distance Formula: $d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

Complete the following:

1) Which statement describes the triangle shown below?



a) It is isosceles and acute

b) It is isosceles and obtuse.

c) It is scalene and acute.

d) It is scalene and obtuse.

2) Which of the following are always congruent?

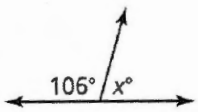
a) adjacent angles

b) vertical angles

c) complementary angles

d) supplementary angles

Tell whether the angles are *adjacent* or *vertical*. Then find the value of x.

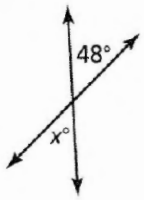
3) 

Adjacent

$x + 106 = 180$

$-106 \quad -106$

$\boxed{x = 74°}$

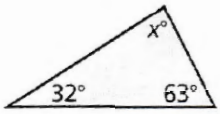
4) 

Vertical

$\boxed{x = 48°}$

Vertical angles are congruent

Find the value of x. Then classify the triangle. Show all algebraic work.

5) 

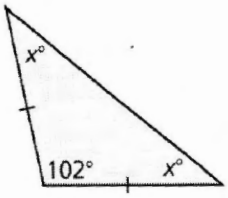
$x + 32 + 63 = 180$

$x + 95 = 180$

$-95 \quad -95$

$\boxed{x = 85°}$

Acute scalene triangle

6) 

$x + x + 102 = 180$

$2x + 102 = 180$

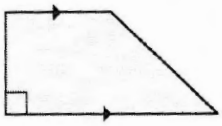
$-102 \quad -102$

$\frac{2x}{2} = \frac{78}{2}$

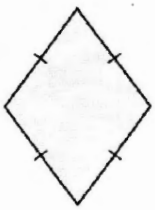
$\boxed{x = 39°}$

Obtuse isosceles triangle

Classify the quadrilateral.

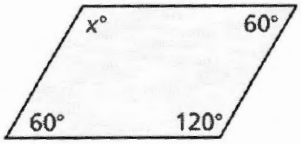
7) 

Trapezoid

8) 

Rhombus

Find the value of x. Show all algebraic work.

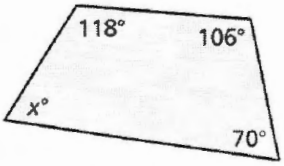
9) 

$x + 60 + 120 + 60 = 360$

$x + 240 = 360$

$-240 \quad -240$

$\boxed{x = 120°}$

10) 

$x + 118 + 106 + 70 = 360$

$x + 294 = 360$

$-294 \quad -294$

$\boxed{x = 66°}$

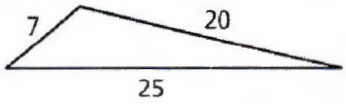
11) Find the missing dimension. Use the scale factor 1 : 15.

Item	Model	Actual
Tree	Height: ? ft	Height: 30 ft
Door	Height: 10 in.	Height: ? in.

$\frac{1}{15} = \frac{x}{30}$ $\boxed{x = 2 ft}$

$\frac{1}{15} = \frac{10}{x}$ $\boxed{x = 150 in}$

Tell whether the triangle with the given side lengths is a right triangle. SHOW ALL WORK.

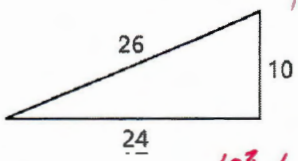
12) 

$7^2 + 20^2 \stackrel{?}{=} 25^2$

$49 + 400 \quad 625$

$449 \neq 625$

No.

13) 

$10^2 + 24^2 \stackrel{?}{=} 26^2$

$100 + 576 \quad 676$

$676 = 676$

Yes

Find the distance between the two points. SHOW ALL WORK.

14) (2, −4), (3, −1)

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$= \sqrt{(3-2)^2 + (-1-(-4))^2}$

$= \sqrt{1^2 + 3^2}$

$= \sqrt{1+9}$

$= \sqrt{10}$

15) (3, 2), (7, 5)

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

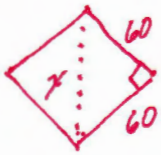
$= \sqrt{(7-3)^2 + (5-2)^2}$

$= \sqrt{4^2 + 3^2}$

$= \sqrt{16+9}$

$= \sqrt{25} = 5$

16) On the Junior League baseball field, you run 60 feet to first base and then 60 feet to second base. You are out at second base and then run directly along the diagonal to home plate. Find the total distance that you ran. Round your answer to the nearest tenth.



$60^2 + 60^2 = x^2$

$3600 + 3600 = x^2$

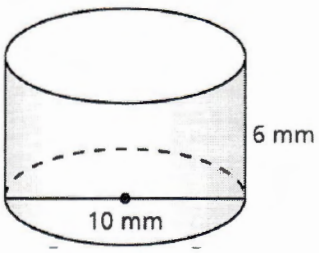
$7200 = x^2$

$84.9 \approx x$

Total distance $= 60 + 60 + 84.9$

$= 204.9$ ft

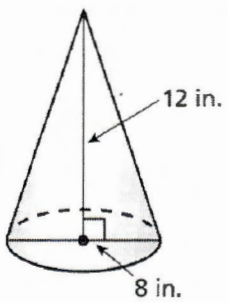
Find the volume of the solid. SHOW ALL WORK. Round your answer to the nearest tenth.

17) 

$V = \pi r^2 H$

$= 3.14 \times 5^2 \times 6$

$\approx 471 \text{ mm}^3$

18) 

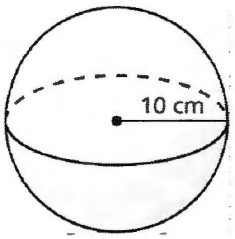
$V = \frac{1}{3}\pi r^2 H$

$= \frac{1}{3} \times 3.14 \times 4^2 \times 12$

$= 200.96$

$\approx 201.0 \text{ in}^3$

19)

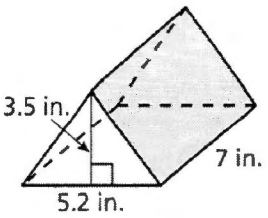


$V = \frac{4}{3}\pi r^3$

$= \frac{4}{3} \times 3.14 \times 10^3$

$\approx 4186.7\ cm^3$

20)



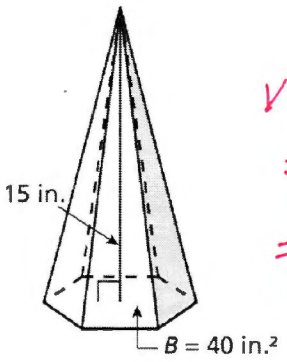
$V = BH$

$= \frac{1}{2}bh \times H$

$= \frac{1}{2} \times 5.2 \times 3.5 \times 7$

$= 63.7\ in^2$

21)

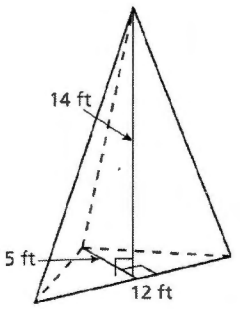


$V = \frac{1}{3}BH$

$= \frac{1}{3} \times 40 \times 15$

$= 200\ in^3$

22)



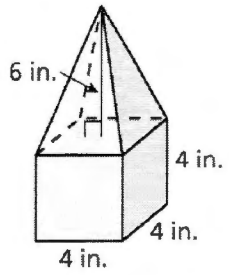
$V = \frac{1}{3}BH$

$= \frac{1}{3} \times \frac{1}{2}bh \times H$

$= \frac{1}{3} \times \frac{1}{2} \times 12 \times 5 \times 14$

$= 140\ ft^3$

23)



$V_{pyramid} = \frac{1}{3}Blt$

$= \frac{1}{3} \times 16 \times 6$

$= 32$

$V_{prism} = BH$

$= 16 \times 4$

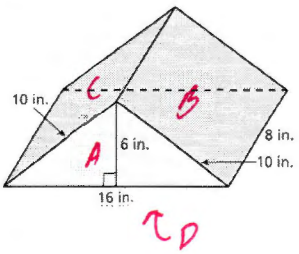
$= 64$

$V_{Total} = 32 + 64$

$= 96\ in^3$

Find the surface area of the solid. SHOW ALL WORK. Round your answer to the nearest tenth.

24)



$A = 48 \times 2 = 96$

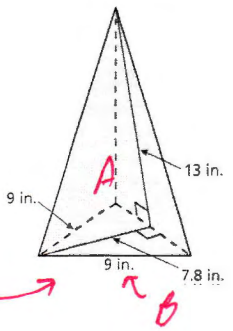
$B = 80$

$C = 80$

$D = 160$

$416\ in^2$

25)



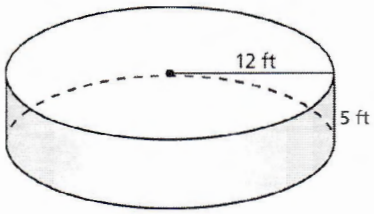
Equilateral Triangle

$A = 58.5 \times 3 = 175.5$

$B = 35.1$

$210.6\ in^2$

26)



$SA = 2\pi r^2 + \pi d h$

$= 2 \times 3.14 \times 12^2 + 3.14 \times 24 \times 5$

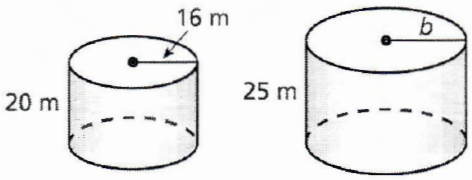
$= 904.32 + 376.8$

$= 1281.12$

$\approx$ 1281.1 ft²

The solids are similar. Find the missing dimension,

27)

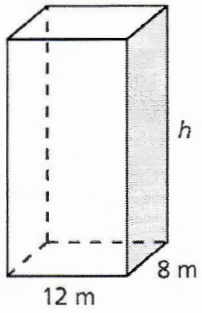


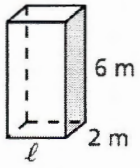
Similar solids have proportional dimensions.

$\frac{20}{25} = \frac{16}{b}$

$b = 20$ m

28)





$\frac{8}{2} = \frac{12}{\ell}$

$\ell = 3$ m

$\frac{8}{2} = \frac{h}{6}$

$h = 24$ m

The solids are similar. Find the surface area or the volume of the larger solid. Round your answer to the nearest tenth.

29) Volume = 250 mm³

Scale factor

$\frac{3}{4}$

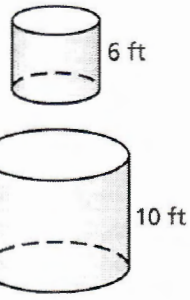
Ratio of volumes

$\frac{27}{64}$

$\frac{27}{64} = \frac{250}{x}$

$x \approx 592.6$ mm³

30) Surface Area = 130 ft²



Scale factor

$\frac{6}{10} = \frac{3}{5}$

Ratio of surface areas

$\frac{9}{25}$

$\frac{9}{25} = \frac{130}{x}$

$x \approx 361.1$ ft²

p. 347 #1-10; p. 362 #1-9 odd

1. $14\pi \approx 44.0 \text{ yd}^3$
2. $36\pi \approx 113.1 \text{ ft}^3$
3. $50\pi \approx 157.1 \text{ cm}^3$
4. $132\pi \approx 414.7 \text{ in.}^3$
5. $\frac{340}{9\pi} \approx 12.0 \text{ ft}$
6. $\sqrt{\frac{2814}{4.7\pi}} \approx 13.8 \text{ cm}$
7. $\frac{28.26}{\pi} \approx 9 \text{ cm}$
8. The volume is 27 times greater.
9. about 42.45 in.^3
10. 13.5 in.

1. $\frac{2048\pi}{3} \approx 2144.7 \text{ in.}^3$
3. 15 yd
5. $768\pi + 192\pi = 960\pi$
   $\approx 3015.9 \text{ ft}^3$
7. $w = 2.5$ in.
   $h = 5$ in.
9. $\frac{32\pi}{3} \approx 34 \text{ cm}^3$