Watkins
6th Grade

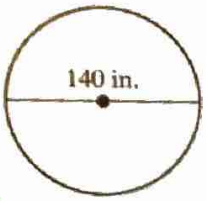
Chapter 8 Test Study Guide

Name _____

Part I: Area

Directions: *Find the area*

1.



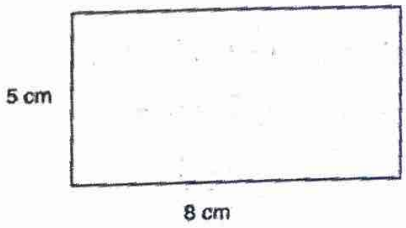
$A = \pi r^2$

$= \pi 70^2$

$= \pi 4900$

$A = 15393.804 in^2$

2.



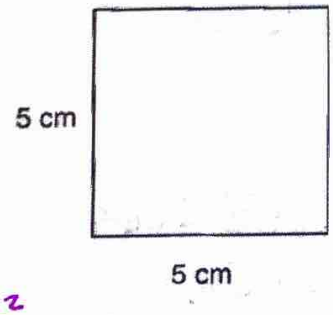
$A = lw$

$= 8.5$

$= 40$

$40 cm^2$

3.



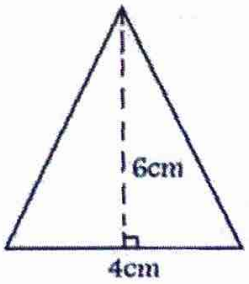
$A = S^2$

$= 5^2$

$= 25$

$25 cm^2$

4.



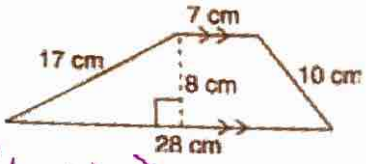
$A = \frac{1}{2}bh$

$= \frac{1}{2} 4 \cdot 6$

$= 2 \cdot 6$

$= 12$

$12 cm^2$

5. 

$140\ cm^2$

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

$= \frac{1}{2}8(28+7)$

$= \frac{1}{2}8(35)$

$= 4(35)$

$= 140$

Part II: Square Roots and Rational and Irrational Numbers

Directions: Simplify each square root. For non-perfect squares, estimate to the nearest whole number.

6. $\sqrt{201}$

$\sqrt{196} < \sqrt{201} < \sqrt{225}$

$14 < \sqrt{201} < 15$

$\sqrt{201} \approx 14$

7. $\sqrt{25}$

5

8. $\sqrt{400}$

20

9. $\sqrt{196}$

14

10. $\sqrt{169}$

13

11. $\sqrt{52}$

$\sqrt{49} < \sqrt{52} < \sqrt{64}$

$7 < \sqrt{52} < 8$

$\sqrt{52} \approx 7$

Directions: Identify each number as rational or irrational

12. $\sqrt{81} = 9$ Rational

13. $7.\overline{21}$ Rational

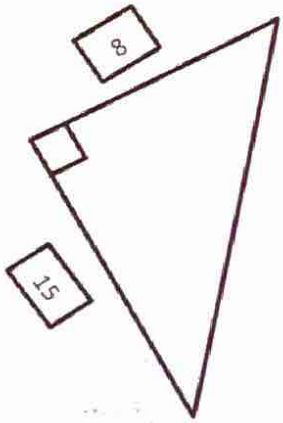
14. $-9\frac{2}{3}$ Rational

15. $\sqrt{130}$ Irrational

↳ Not a perfect square.

Part III: The Pythagorean Theorem

16.

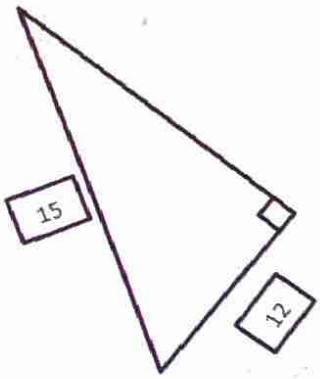


Show Work!

$a^2+b^2=c^2$
$8^2+15^2=c^2$
$64+225=c^2$
$289=c^2$
$\sqrt{289}=c$
$17=c$

The hypotenuse is 17 units long.

17.



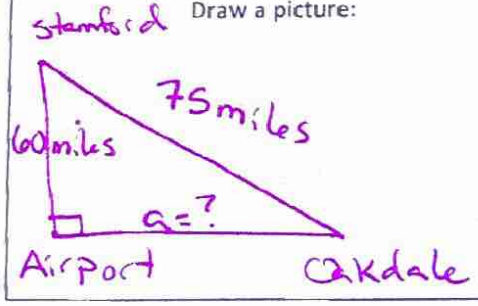
Show Work!

$a^2+b^2=c^2$
$12^2+b^2=15^2$
$144+b^2=225$
$-144 \quad -144$
$b^2=81$
$b=\sqrt{81}$

$b=9$ units

18. Stamford is 60 miles due north of the airport, and Oakdale is due east of the airport. If the distance between Stamford and Oakdale is 75 miles, how far is Oakdale from the airport?

Draw a picture:



Show work:

$a^2+b^2=c^2$
$60^2+b^2=75^2$
$3600+b^2=5625$
$-3600 \quad -3600$
$b^2=2025$
$b=\sqrt{2025}$

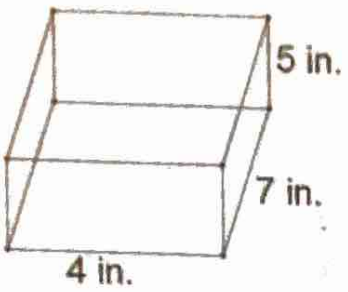
$b=45$

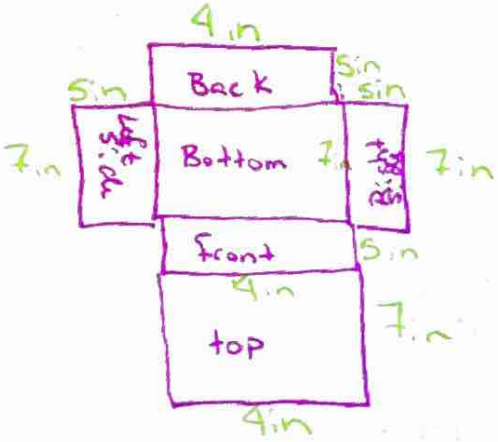
Oakdale is 45 miles away from the airport.

Part IV: Surface Area and Volume

Directions: *Draw the net of each three dimensional figure and then find the surface area and volume.*

19.





Surface Area

Back: $4 \times 5 = 20 in^2$
Bottom: $4 \times 7 = 28 in^2$
front: $4 \times 5 = 20 in^2$
Top: $4 \times 7 = 28 in^2$
Left: $5 \times 7 = 35 in^2$
Right: $5 \times 7 = 35 in^2$

$20 + 28 + 20 + 28 + 35 + 35 = 166$

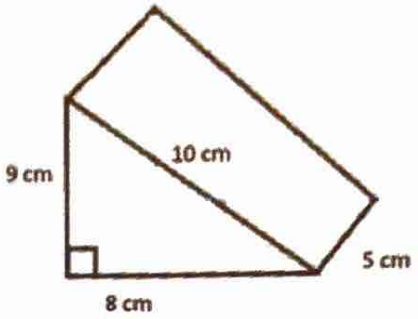
Volume

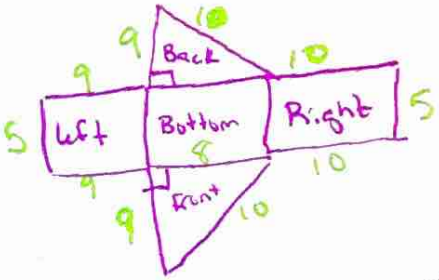
$V = Bh$
$B = 4 \times 7$
$h = 5$
$V = 4 \times 7 \times 5$
$= 140$

Surface Area: $166 in^2$

Volume: $140 in^3$

20.





Surface Area

Left: $9 \times 5 = 45$
Bottom: $5 \times 8 = 40$
Right: $5 \times 10 = 50$
Back: $\frac{1}{2} \cdot 9 \cdot 8 = 36$
Front: $\frac{1}{2} \cdot 9 \cdot 8 = 36$

$45 + 40 + 50 + 36 + 36 = 207$

Volume

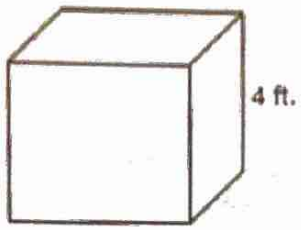
$V = Bh$
$B = \frac{1}{2} \cdot 8 \cdot 9$
$h = 5$
$V = \frac{1}{2} \cdot 8 \cdot 9 \cdot 5$
$= 4 \cdot 9 \cdot 5$
$= 36 \cdot 5$
$= 180$

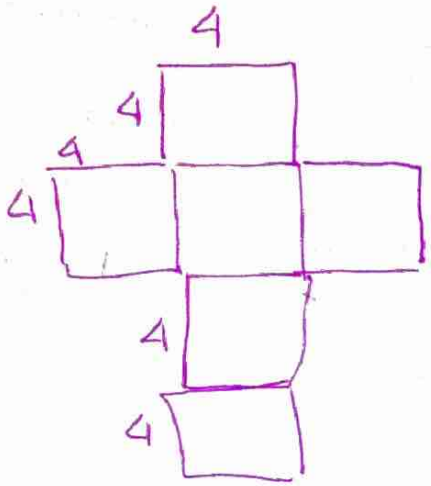
Surface Area: $207 cm^2$

Volume: $180 cm^3$

Cube.

21.





Surface Area

$A = 4^2$

$= 16$

$SA = 6 \cdot 16 = 96$

↑ # of faces

↖ Area of each face $= 4^3$

$= 64$

Volume

$V = Bh$

$B = 4^2$

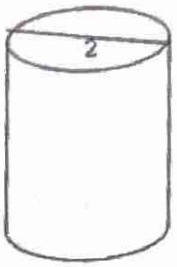
$h = 4$

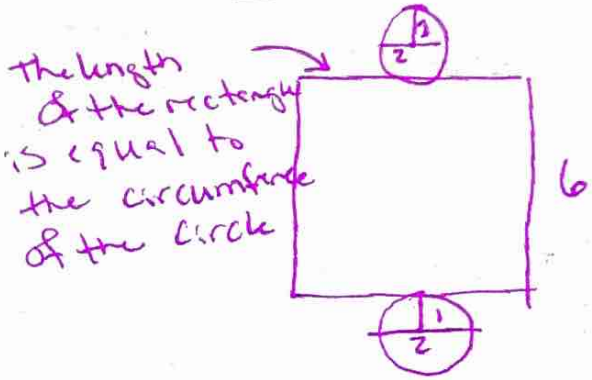
$V = 4^2 \cdot 4$

Surface Area: $96\ ft^2$

Volume: $64\ ft^3$

22.





Surface Area

$A = \pi r^2$

$= \pi 1^2$

$= \pi$ or 3.14

$A = l \cdot w$

$= \pi \cdot 2 \cdot 6$

$= 37.7$

$SA = 37.7 + 2 \cdot 3.14$

$= 43.98$

Volume

$V = Bh$

$B = \pi r^2$

$= \pi \cdot 1^2$

$= \pi$

$h = 6$

$V = \pi \cdot 6$

$V = 6\pi$

$= 18.85$

Surface Area: $43.98\ units^2$

Volume: $18.85\ units^3$

23: How much cat food would fit into a can that has a height of 14 ¼ cm and a diameter of 9cm? How much paper would you need to make the label?

This is a volume problem for the first part.

if $d = 9cm$ then $r = 4.5cm$

$V = Bh$

$B = \pi r^2$

$= \pi 4.5^2$

$= 63.6$

$h = 14.5$

$V = 63.6 \cdot 14.5$

$V = 922.2$

It can hold 922.2 cubic cm of food.

Question 2: You only need the area of the label which is the rectangle part of the net.

Area = Circumference of the circle times the height of the cylinder.

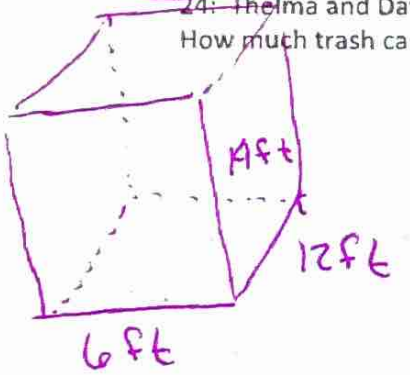
$A = 9\pi \cdot 14.5$

$A = 409.977$

You would need about 410 cm^2 for the label

24: Thelma and David built a recycling bin that is 6 feet wide, 12 feet long, and 14 feet high. How much trash can fit inside of the bin?

↖ this means volume.



$V = Bh$

$B = 6 \times 12$

$h = 14$

$V = 6 \times 12 \times 14$

The recycle bin can hold 1,008 ft^3 of Material. (hopefully not trash)