Geometry
Worksheet 9.5-9.8

Name___Key___
Period_____
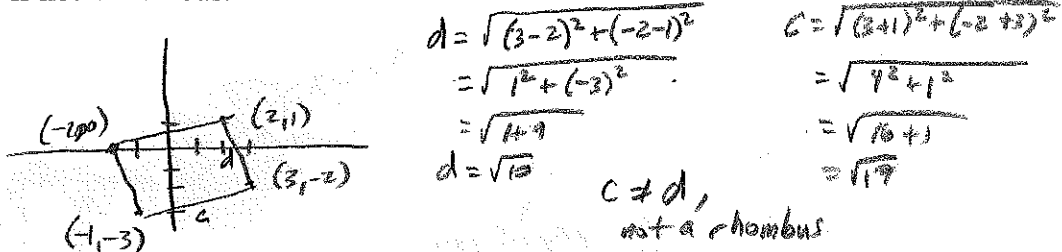
1. Show that the parallelogram whose vertices are (-1, -3), (2, 1), (3, -2), and (-2, 0) is not a rhombus.

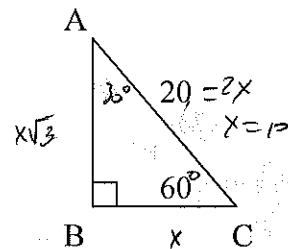$d = \sqrt{(3-2)^2 + (-2-1)^2}$
$= \sqrt{1^2 + (-3)^2}$
$= \sqrt{1+9}$
$d = \sqrt{10}$

$c = \sqrt{(2+1)^2 + (-8+3)^2}$
$= \sqrt{3^2 + 1^2}$
$= \sqrt{16+1}$
$= \sqrt{17}$

$c \neq d$, not a rhombus
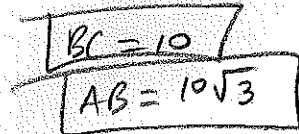
(-2,0)   (2,1)
         (3,-2)
(-1,-3)   c

2. Find the diagonal of a rectangle whose sides are 10 and 24.

(5)10   d (13) $d = 26$

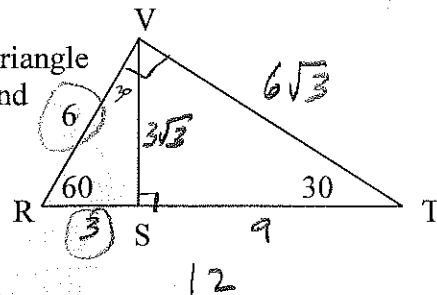3. Find the length of the upper base of the isosceles trapezoid.

$\frac{35}{-18}$
$\frac{}{17}$

$d = 17$

$\begin{array}{}35\\-18\\\hline 17\end{array}$

15 (5) /7³ 12 (4)   15
         x
(3) 9   9
       35

4. Find BC and AB.

$BC = 10$
$AB = 10\sqrt{3}$

A
30° 20 = 2x
x√3   x = 10
      60°
B   x   C

5. Find the sides of a square when the diagonal is 6 in.

$x^2 + x^2 = 6^2$
$2x^2 = 36$
$x^2 = 18$

$x = \sqrt{18}$
$\sqrt{9}\sqrt{2}$
$x = 3\sqrt{2}$

6. Using the figure, where triangle VRT is a right triangle and segment VS is an altitude to segment RT, find
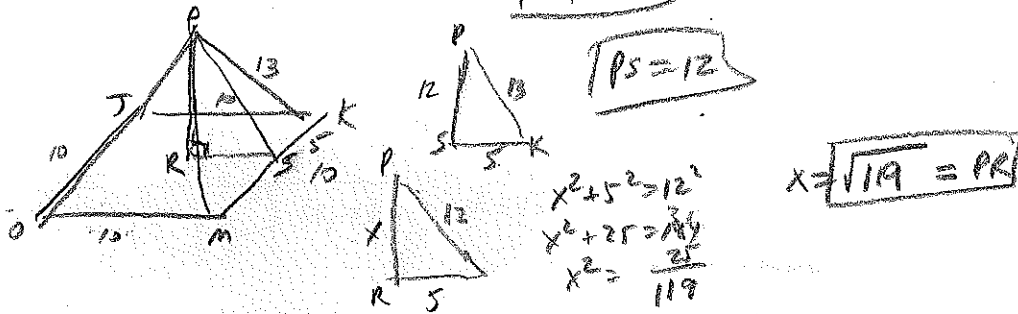
a. VS = $3\sqrt{3}$
b. ST = 9
c. VT = $6\sqrt{3}$
d. The ratio of the perimeter of $\triangle VSR$ to the perimeter of $\triangle VRT$.
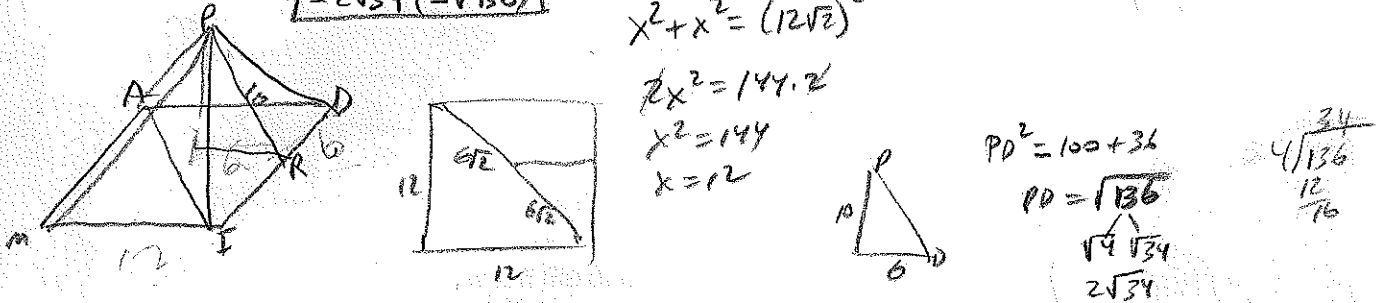
ratio of perim = ratio of sides

$\frac{3}{6} = \frac{1}{2}$

V
30   6√3
6 3√3
60   30
R (3) S   9   T
      12

7. Given: The regular square pyramid with altitude $\overline{PR}$ and slant height $\overline{PS}$, perimeter of JKMO = 40, and PK = 13.
Find a. JK   b. PS   c. PR

$JK = 10$

$PS = 12$

$x^2 + 5^2 = 12^2$
$x^2 + 25 = 144$
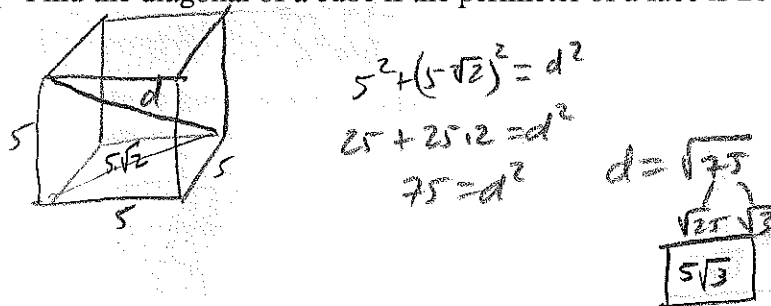$x^2 = 119$

$x = \sqrt{119} = PR$

8. PADIM is a regular square pyramid. Slant height $\overline{PR}$ measures 10, and the base diagonals measure $12\sqrt{2}$.

a. Find ID. $= 12$
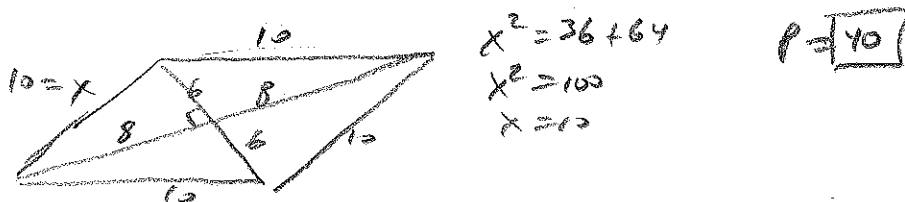b. Find the altitude of the pyramid. $= 8$
c. Find RD. $= 6$
d. Find PD. $= 2\sqrt{34} \ (= \sqrt{136})$

$10^2 = 6^2 + alt^2$
$100 = 36 + alt^2$
$\frac{36}{64} = alt^2$
$alt = 8$

$x^2 + x^2 = (12\sqrt{2})^2$
$2x^2 = 144 \cdot 2$
$x^2 = 144$
$x = 12$

$PD^2 = 100 + 36$
$PD = \sqrt{136}$
$\sqrt{4}\sqrt{34}$
$2\sqrt{34}$

9. Find the diagonal of a cube if the perimeter of a face is 20. (Draw a figure.)

$5^2 + (5\sqrt{2})^2 = d^2$
$25 + 25 \cdot 2 = d^2$
$75 = d^2$ $d = \sqrt{75}$
$\sqrt{25}\sqrt{3}$
$5\sqrt{3}$

10. If the diagonals of a rhombus are 16 and 12, what is the perimeter of the rhombus?

$x^2 = 36 + 64$
$x^2 = 100$
$x = 10$

$P = 40$

Geometry   Name_____
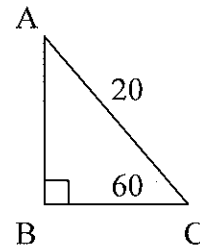Worksheet 9.5-9.8   Period_____

1.   Show that the parallelogram whose vertices are (-1, -3), (2, 1), (3, -2), and (-2, 0)
      is not a rhombus.

2.   Find the diagonal of a rectangle whose sides are 10 and 24.

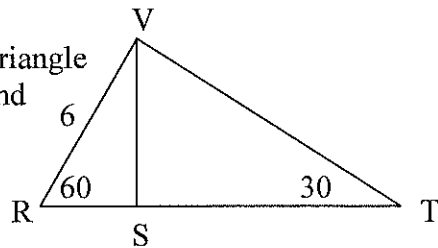3.   Find the length of the upper base of the isosceles trapezoid.
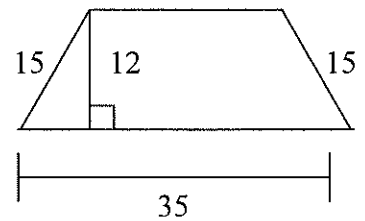
4.   Find BC and AB.

5.   Find the sides of a square when the diagonal is 6 in.

6.   Using the figure, where triangle VRT is a right triangle
      and segment VS is an altitude to segment RT, find

      a. VS
      b. ST
      c. VT
      d. The ratio of the perimeter of $\triangle VSR$
          to the perimeter of $\triangle VRT$.

7. Given: The regular square pyramid with altitude $\overline{PR}$ and slant height $\overline{PS}$, perimeter of JKMO = 40, and PK = 13.
Find a. JK   b. PS   c. PR

8. PADIM is a regular square pyramid . Slant height $\overline{PR}$ measures 10, and the base diagonals measure $12\sqrt{2}$.

 a. Find ID.
 b. Find the altitude of the pyramid.
 c. Find RD.
 d. Find PD.

9. Find the diagonal of a cube if the perimeter of a face is 20. (Draw a figure.)

10. If the diagonals of a rhombus are 16 and 12, what is the perimeter of the rhombus?

Geometry
Chapter 9 Review Worksheet #1

Name Key

Period _____

For #1-4, solve for x:

1.
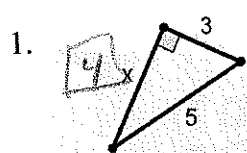
Pythagorean Triple $\{3,4,5\}$

$x=4$

1. ____4____

2.

$\div 2$ $\{5,12,13\}$

2. ____10____

3.
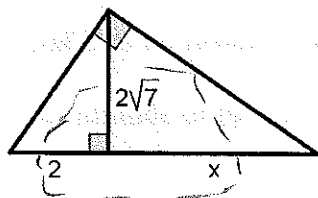
$30-60-90 \triangle$

3. ____8____

4.
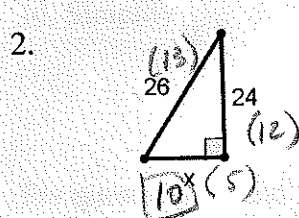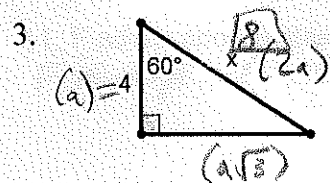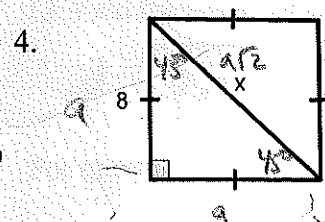
$x=8\sqrt{2}$

4. ____$8\sqrt{2}$____

5. Find, in simplified radical form, an altitude of the equilateral triangle shown with a side of length 12.
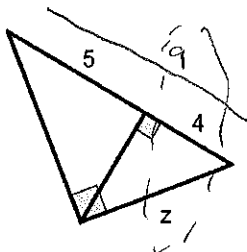
$6\sqrt{3} = \boxed{6\sqrt{3}}$

5. ____$6\sqrt{3}$____
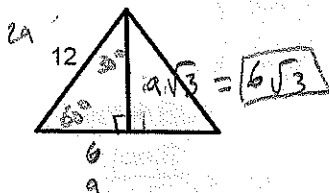
6. Solve for x.

$(2\sqrt{7})^2 = 2x$

$4 \cdot 7 = 2x$

$28 = 2x$

$14 = x$

6. ____14____

7. Solve for z.

$z^2 = 4 \cdot 9$

$z^2 = 36$

$z = \sqrt{36}$

$z = 6$

7. ____6____

8. Find the perimeter of a square with a diagonal 12. (Draw a picture)
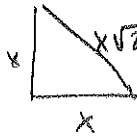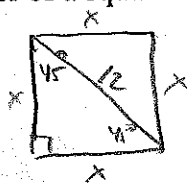
8. $24\sqrt{2}$

$x\sqrt{2} = 12$ $\dfrac{x\sqrt{2}}{\sqrt{2}} = \dfrac{12}{\sqrt{2}}$

$x = \dfrac{12}{\sqrt{2}} \cdot \dfrac{\sqrt{2}}{\sqrt{2}} = \dfrac{12\sqrt{2}}{2} = 6\sqrt{2} \quad \times 4$

9. Simplify $\sqrt{54}$

$\sqrt{9}\sqrt{6}$
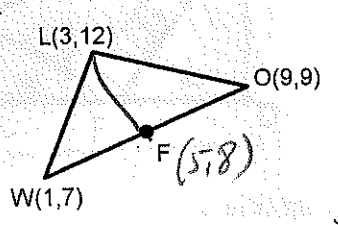$3\sqrt{6}$

9. $3\sqrt{6}$

10. Simplify $\sqrt{\dfrac{4}{7}} = \dfrac{\sqrt{4}}{\sqrt{7}} = \dfrac{2}{\sqrt{7}} \cdot \dfrac{\sqrt{7}}{\sqrt{7}} = \dfrac{2\sqrt{7}}{7}$

10. $\dfrac{2\sqrt{7}}{7}$

For questions 11 and 12, F is the midpoint of $\overline{WO}$.

11. Find the coordinates of F.

F is midpt $= \left(\dfrac{x_1+x_2}{2}, \dfrac{y_1+y_2}{2}\right) = \left(\dfrac{9+1}{2}, \dfrac{9+7}{2}\right)$

$= (5, 8)$

11. $(5, 8)$

L(3,12)
O(9,9)
F (5,8)
W(1,7)

12. Find the length of the median from L to F.

$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2} = \sqrt{(3-5)^2 + (12-8)^2} = \sqrt{2^2+4^2} = \sqrt{4+16}$
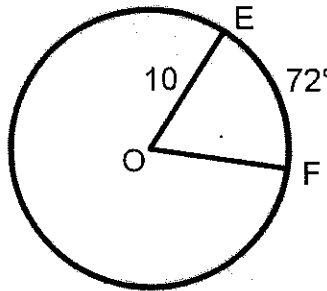$= \sqrt{20} = \sqrt{4}\sqrt{5} = 2\sqrt{5}$

12. $2\sqrt{5}$

For questions 13 and 14, in circle O, OA=10 and $m\overset{\frown}{EF} = 72°$

13. Find the **length** of arc EF. $= (\text{frac})(\text{circum})$

$72 \overline{)360} \quad 360$

$\left(\dfrac{72}{360}\right)(2\pi r)$

$\left(\dfrac{1}{5}\right)(2\pi \cdot 10) = \dfrac{20\pi}{5}$

13. 4π

E
10
72°
O
F

14. Find the **area** of sector EOF.

$(\text{frac})(\pi r^2)$
$\left(\dfrac{1}{5}\right)(\pi(10)^2)$
$\dfrac{1}{5}(100\pi)$
$= \dfrac{100\pi}{5} = 20\pi$

14. 20π

For questions 15-16, ABCD is an isosceles trapezoid. BC=7 and AD=19.
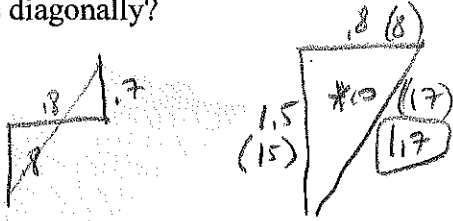
15. Find the length of an altitude of the trapezoid.

$12 = 2x \quad x\sqrt{3}$
$6\sqrt{3} = h$

15. $6\sqrt{3}$

C 7 B
12 h 12
60° 7 60°
D 6   6 A
19
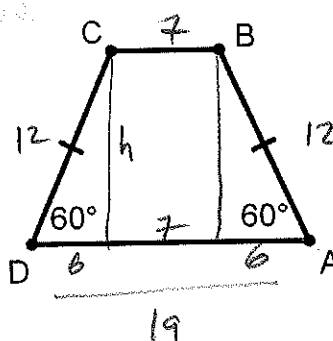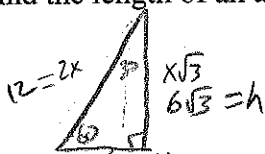
16. Find the **exact** perimeter of the trapezoid.

$P = \begin{array}{l}12\\12\\7\\\underline{19}\\50\end{array}$
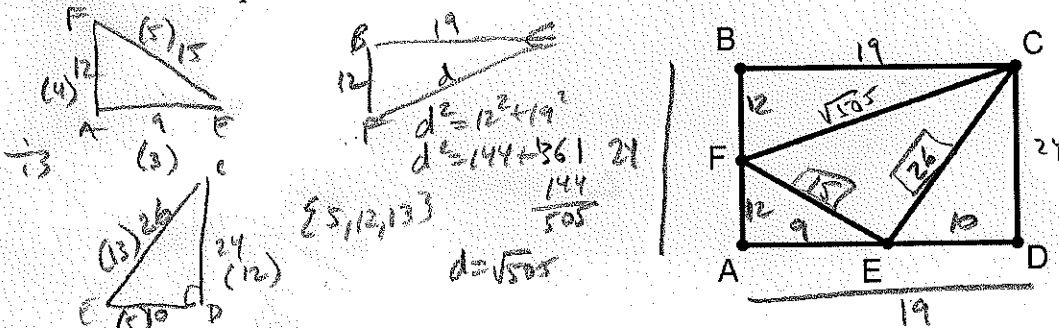
16. 50

17. Jill walks 0.7 km south, then 0.8 km west, then 0.8 km south. How far is she from her starting point if she measures diagonally?

17. _____ 1.7 _____

18. ABCD is a rectangle. If AD=19, AE=9, AB=24, and F is the midpoint of $\overline{AB}$
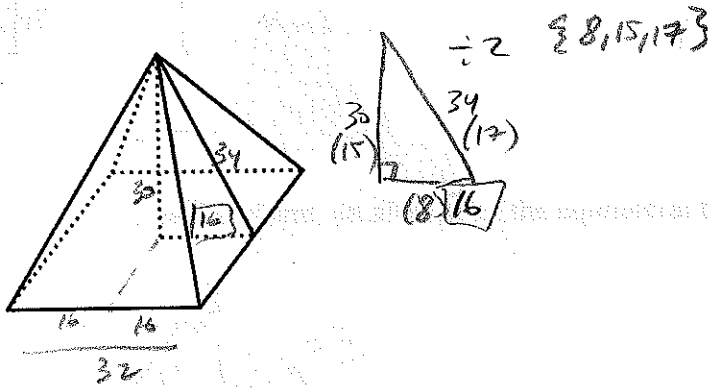   Find the perimeter of $\triangle CEF$.

18. _____ $41 + \sqrt{505}$ _____

$d^2 = 12^2 + 19^2$
$d^2 = 144 + 361$
$d = \sqrt{505}$

19. The slant height of the regular square pyramid shown is 34 and the altitude of the pyramid is 30.
Find the length of a side of the base of the pyramid.

19. _____ 32 _____

$\div 2 \quad \{8, 15, 17\}$

20. Find the height of the rectangular solid whose base is 7 by 24 and whose diagonal is 50.

20. _____ $25\sqrt{3}$ _____

$\{7, 24, 25\}$

Geometry
Chapter 9 Review Worksheet #1

For #1-4, solve for x:

1.

3

x

5

1._____

2.

26   24

x

2._____

3.

60°   x

4

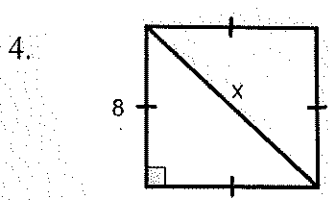3._____

4.
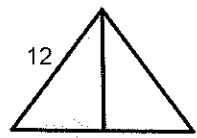
8   x
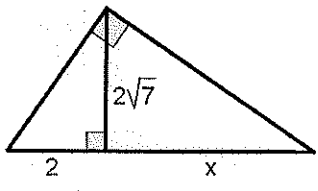
4._____

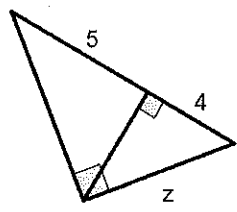5. Find, in simplified radical form, an altitude of the equilateral triangle shown with a side of length 12.

12

5._____

6. Solve for x.

$2\sqrt{7}$

2   x

6._____

7. Solve for z.

5

4
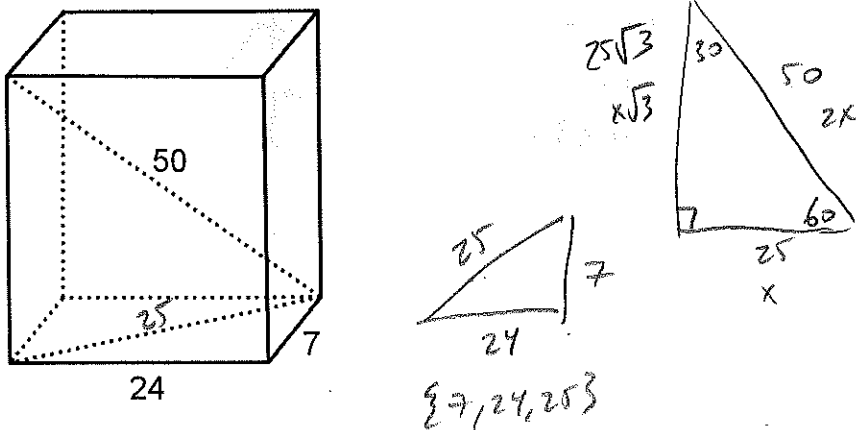
z

7._____

8. Find the perimeter of a square with a diagonal 12. (Draw a picture)
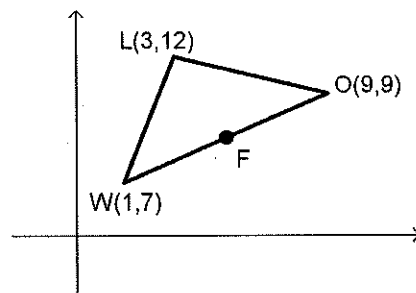
8. _____

9. Simplify $\sqrt{54}$

9. _____

10. Simplify $\sqrt{\dfrac{4}{7}}$

10. _____

For questions 11 and 12, F is the midpoint of $\overline{WO}$.
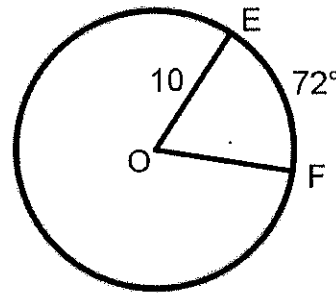
11. Find the coordinates of F.

11. _____

12. Find the length of the median from L to F.

12. _____

For questions 13 and 14, in circle O, OA=10 and $m\overarc{EF} = 72°$
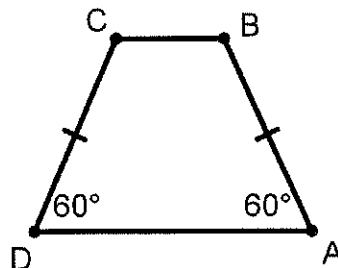
13. Find the **length** of arc EF.

13. _____

14. Find the **area** of sector EOF.

14. _____

For questions 15-16, ABCD is an isosceles trapezoid.   BC=7 and AD=19.

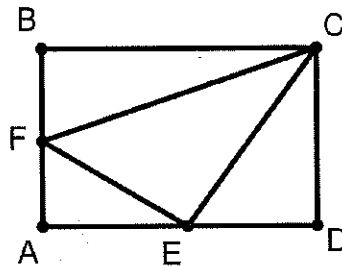15. Find the length of an altitude of the trapezoid.

15. _____

16. Find the exact perimeter of the trapezoid.

16. _____

17. Jill walks 0.7 km south, then 0.8 km west, then 0.8 km south. How far is she from her starting point if she measures diagonally?
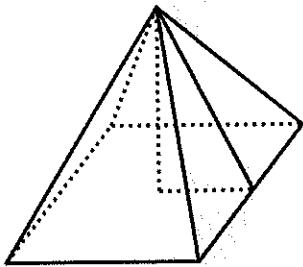
17. _____

18. ABCD is a rectangle. If AD=19, AE=9, AB=24, and F is the midpoint of $\overline{AB}$
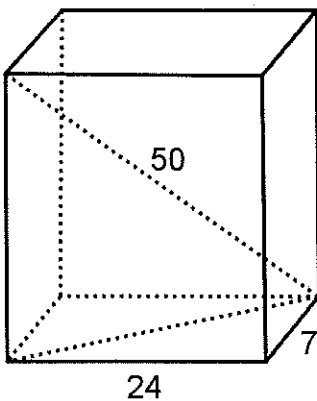Find the perimeter of $\triangle CEF$.

18. _____

19. The slant height of the regular square pyramid shown is 34 and the altitude of the pyramid is 30. Find the length of a side of the base of the pyramid.

19. _____

20. Find the height of the rectangular solid whose base is 7 by 24 and whose diagonal is 50.

20. _____

Answer Key, Geo Chapter 9 Review Worksheet #1

#1. 4

#2. 10

#3. 8

#4. $8\sqrt{2}$

#5. $6\sqrt{3}$

#6. 14

#7. 6

#8. $24\sqrt{2}$

#9. $3\sqrt{6}$

#10. $\dfrac{2\sqrt{7}}{7}$

#11. (5, 8)

#12. $2\sqrt{5}$

#13. 4π

#14. 20π

#15. $6\sqrt{3}$
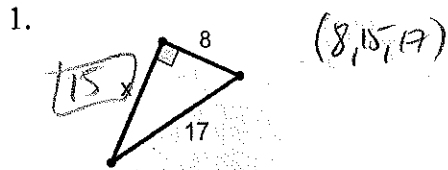
#16. 50

#17. 1.7

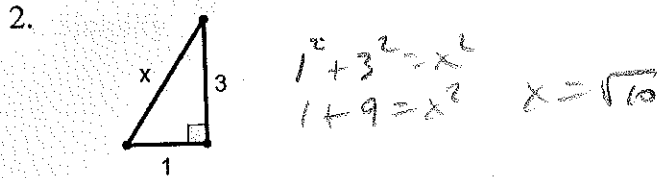#18. $41+\sqrt{505}$

#19. 32

#20. $25\sqrt{3}$
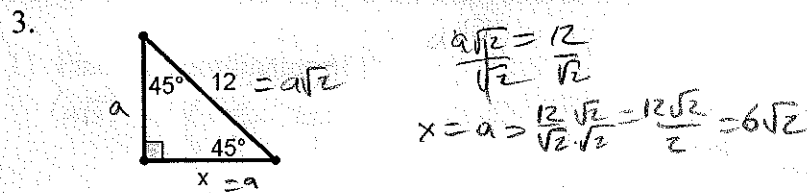
Geometry
Chapter 9 Review Worksheet #2

Name _____ Key _____

Period _____

For #1-4, solve for x:

1.

8
15 x
17

$(8, 15, 17)$

1. _____ 15 _____

2.

x   3
1

$1^2 + 3^2 = x^2$
$1 + 9 = x^2$ $x = \sqrt{10}$

2. _____ $\sqrt{10}$ _____

3.

45° $12 = a\sqrt{2}$
a
45°
$x = a$

$\frac{a\sqrt{2}}{\sqrt{2}} = \frac{12}{\sqrt{2}}$

$x = a > \frac{12}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{12\sqrt{2}}{2} = 6\sqrt{2}$

3. _____ $6\sqrt{2}$ _____

4.

a=x $13\sqrt{2} = a\sqrt{2}$

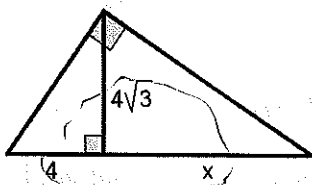$13\sqrt{2} = a\sqrt{2}$
$13 = a$
$x = a = \boxed{13}$
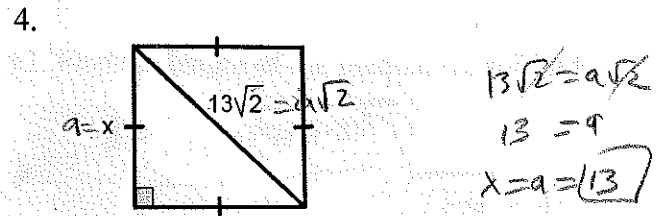
4. _____ 13 _____

5. Find, in simplified radical form, an altitude of the equilateral triangle shown with a side of length 12.

4
x
2   2

30
$2\sqrt{3}$ 4
7   60
2

5. _____ $2\sqrt{3}$ _____

6. Solve for x.

$4\sqrt{3}$
4   x

$(4\sqrt{3})^2 = 4x$
$16 \cdot 3 = 4x$
$\frac{48}{4} = \frac{4x}{4}$ $x = 12$

6. _____ 12 _____
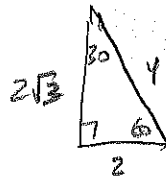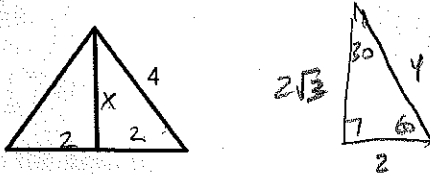
7. Solve for w.

12   16
4
w
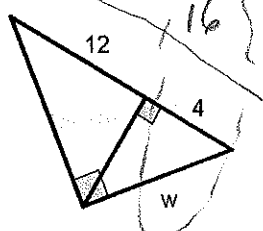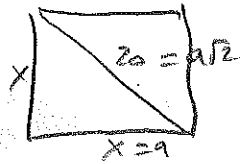
$w^2 = 4 \cdot 16$
$w^2 = 64$
$w = \sqrt{64} = 8$

7. _____ 8 _____

8. Find the perimeter of a square with a diagonal 20. (Draw a picture)

8. ___$40\sqrt{2}$___

$20 = a\sqrt{2}$

$\dfrac{a\sqrt{2}=20}{\sqrt{2}} \quad \sqrt{2}$

$x = a = \dfrac{20}{\sqrt{2}}\cdot\dfrac{\sqrt{2}}{\sqrt{2}} = \dfrac{20\sqrt{2}}{2} = 10\sqrt{2} \quad \times 4 = 40\sqrt{2}$

$x = a$

9. Simplify $\sqrt{63}$

9. ___$3\sqrt{7}$___

$\sqrt{9}\sqrt{7}$

$3\sqrt{7}$

10. Simplify $\sqrt{\dfrac{2}{9}} = \dfrac{\sqrt{2}}{\sqrt{9}} = \dfrac{\sqrt{2}}{3}$

10. ___$\dfrac{\sqrt{2}}{3}$___

For questions 11 and 12, F is the midpoint of $\overline{WO}$.

11. Find the coordinates of F.

11. ___$(2,3)$___

$\left(\dfrac{6-2}{2}, \dfrac{4+2}{2}\right)$

$(2,3)$

L(3,7)

W(-2,4)

O(6,2)

$(2,3)$ F
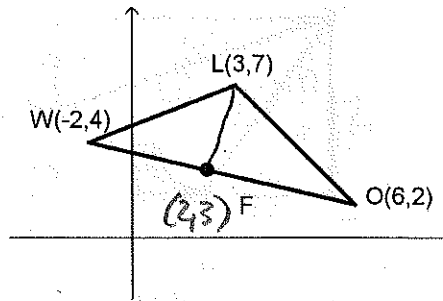
12. Find the length of the median from L to F.

12. ___$\sqrt{17}$___
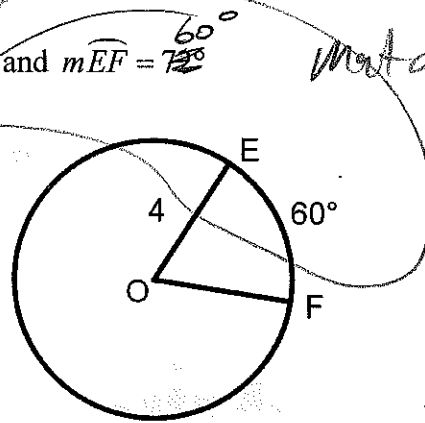
$d = \sqrt{(3-2)^2 + (7-3)^2}$

$\sqrt{1^2 + 4^2} = \sqrt{1+16} = \sqrt{17}$

For questions 13 and 14, in circle O, OA=10 and $m\overparen{EF} = 72°$ $60°$ Match

13. Find the **length** of arc EF.

13. ___$\dfrac{4\pi}{3}$___

$\left(\dfrac{60}{360}\right)(2\pi\cdot4)$

$\left(\dfrac{1}{6}\right)8\pi = \dfrac{8\pi}{6} = \dfrac{4\pi}{3}$

E

4   60°

O   F

14. Find the **area** of sector EOF.

14. ___$\dfrac{8\pi}{3}$___

$\left(\dfrac{1}{6}\right)\left(\pi(4)^2\right)$

$\dfrac{1}{6}\cdot16\pi = \dfrac{8\pi}{3}$

For questions 15-16, ABCD is an isosceles trapezoid.   CD=8 and AD=14.

15. Find the length of an altitude of the trapezoid.

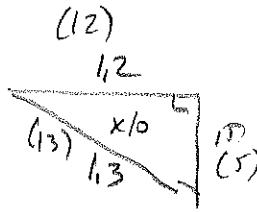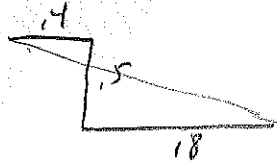15. ___$4\sqrt{3}$___

16. Find the exact perimeter of the trapezoid.

16. ___36___

C   6   B

8   8

$4\sqrt{3}$

60°   60°

D   4   6   4   A

14

$\begin{array}{r} 8 \\ 8 \\ 14 \\ 6 \\ \hline 36 \end{array}$

$\begin{array}{r} 14 \\ -8 \\ \hline 6 \end{array}$

17. Jack walks 0.4 miles east, then 0.5 miles south, then 0.8 miles east. How far is he from his starting point if he measures diagonally?
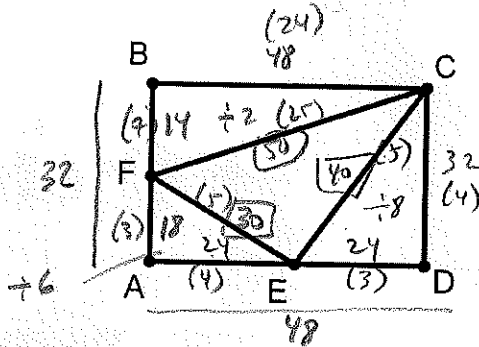
17. _____1.3_____

18. ABCD is a rectangle. If AB=32, BF=14, AD=48, and E is the midpoint of $\overline{AD}$ Find the perimeter of $\triangle CEF$.
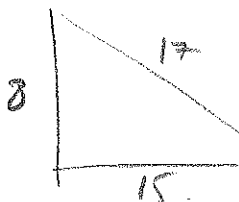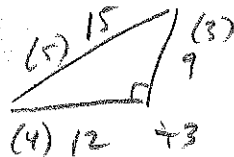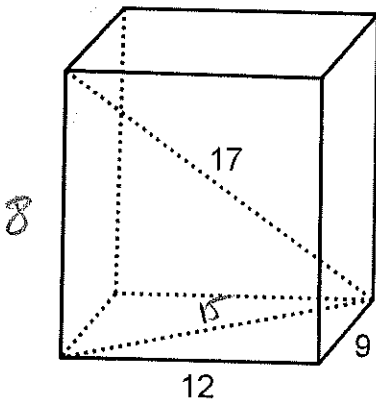
18. _____120_____

19. The slant height of the regular square pyramid shown is 34 and the altitude of the pyramid is 30. Find the length of a side of the base of the pyramid.

19. _____32_____

20. Find the height of the rectangular solid whose base is 9 by 12 and whose diagonal is 17.

20. _____8_____
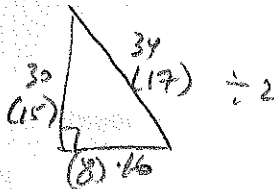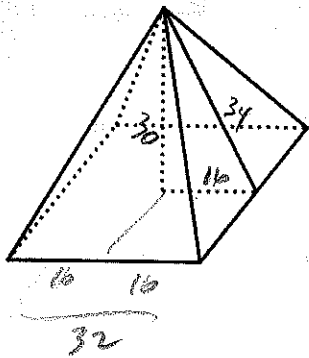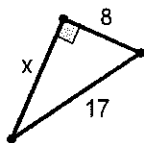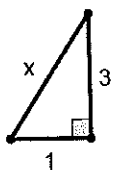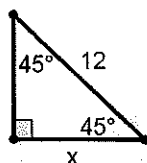
Name_____

For #1-4, solve for x:
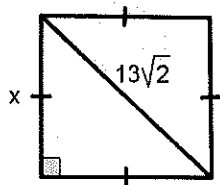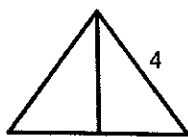
1.

1. _____

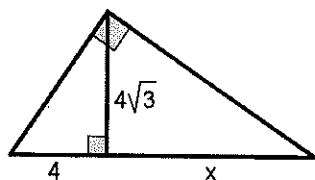2.

2. _____

3.

3. _____

4.

4. _____

5. Find, in simplified radical form, an altitude of the equilateral triangle shown with a side of length 12.
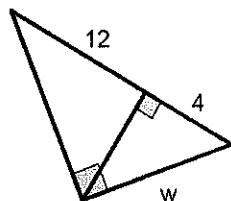

5. _____

6. Solve for x.

6. _____

7. Solve for w.

7. _____

8. Find the perimeter of a square with a diagonal 20. (Draw a picture)
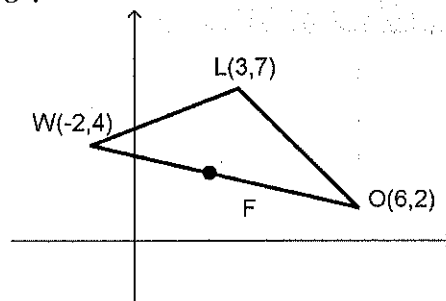
8. _____

9. Simplify $\sqrt{63}$

9. _____

10. Simplify $\sqrt{\dfrac{2}{9}}$

10. _____

For questions 11 and 12, F is the midpoint of $\overline{WO}$.
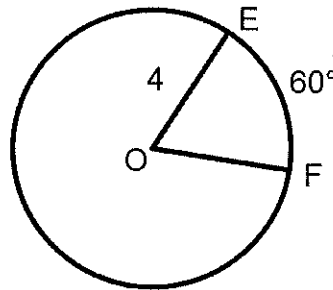
11. Find the coordinates of F.

11. _____

12. Find the length of the median from L to F.

12. _____

For questions 13 and 14, in circle O, OA=10 and $m\overset{\frown}{EF} = 60°$

13. Find the **length** of arc EF.
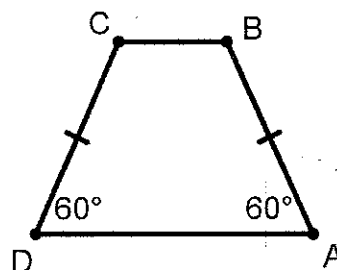
13. _____

14. Find the **area** of sector EOF.

14. _____

For questions 15-16, ABCD is an isosceles trapezoid.   CD=8 and AD=14.

15. Find the length of an altitude of the trapezoid.

15. _____

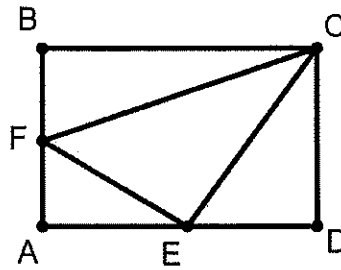16. Find the exact perimeter of the trapezoid.

16. _____

17. Jack walks 0.4 miles east, then 0.5 miles south, then 0.8 miles east. How far is he from his starting point if he measures diagonally?
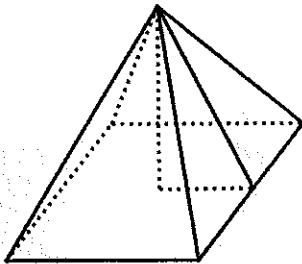
17. _____

18. ABCD is a rectangle. If AB=32, BF=14, AD=48, and E is the midpoint of $\overline{AD}$
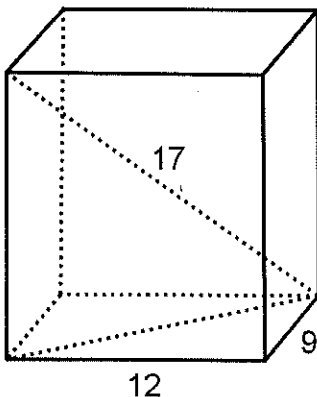   Find the perimeter of $\triangle CEF$.

18. _____

19. The slant height of the regular square pyramid shown is 34 and the altitude of the pyramid is 30. Find the length of a side of the base of the pyramid.

19. _____

20. Find the height of the rectangular solid whose base is 9 by 12 and whose diagonal is 17.

20. _____

Answer Key, Geo Chapter 9 Review Worksheet #2

#1. 15

#2. $\sqrt{10}$

#3. $6\sqrt{2}$

#4. 13

#5. $2\sqrt{3}$

#6. 12

#7. 8

#8. $40\sqrt{2}$

#9. $3\sqrt{7}$

#10. $\dfrac{\sqrt{2}}{3}$

#11. (2, 3)

#12. $\sqrt{17}$

#13. $\dfrac{4\pi}{3}$

#14. $\dfrac{8\pi}{3}$

#15. $4\sqrt{3}$

#16. 36

#17. 1.3

#18. 120

#19. 32

#20. 8