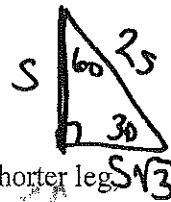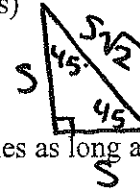Name **KEY**   Date _____

Test Review (Special Segments and Special Right Triangles)
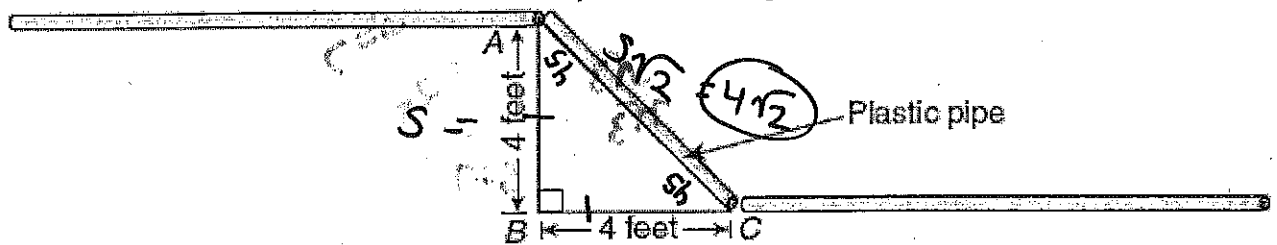Show work to receive credit!   Period _____

1) In a 45°-45°-90° triangle, the hypotenuse is **√2** times as long as a leg.

2) In a 30°-60°-90° triangle, the hypotenuse is **twice** as long as the shorter leg
and the longer leg is **√3** times as long as the shorter leg.

3) The drawing shows part of the plan for a new underground lawn-sprinkler system.
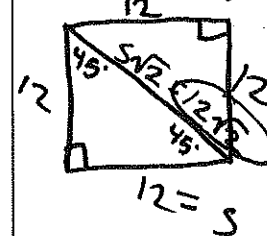
Plan for Sprinkler System

Which is closest to the length of the section of plastic pipe from point A to point C?

A   4.7 ft
B   5.7 ft
C   6.7 ft
D   7.7 ft

4) A fence around a square garden has a perimeter of 48 feet. Find the approximate
length of the diagonal of this square garden.

F   12 ft
G   17 ft
H   21 ft
J   24 ft
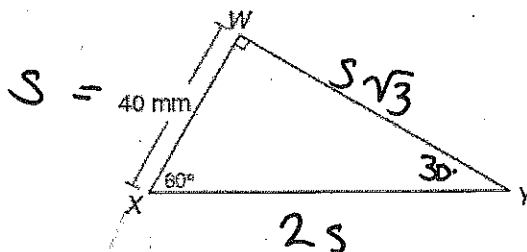
Draw and label your picture.

5) $\triangle WXY$ is a right triangle.

Find the length of $\overline{WY}$.

A   20 mm
B $20\sqrt{3}$ mm
C   60 mm
D $40\sqrt{3}$ mm

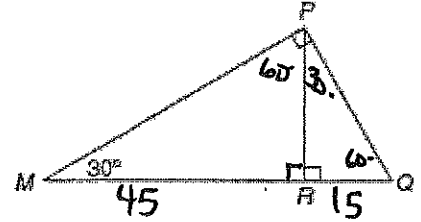Name_____   Date_____
Test Review (Special Segments and Special Right Triangles)
Show work to receive credit!   Period_____

6) In the figure shown below, $\triangle MPQ \sim \triangle PRQ$,
$MR = 45$ units, and $RQ = 15$ units. What is the length of $\overline{PR}$?

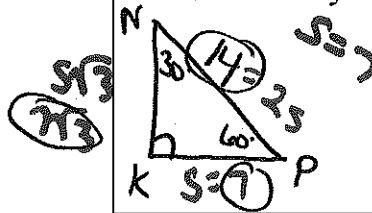$25 \quad 60 \quad S$
$30° \quad$
$45 = S\sqrt{3}$

$45 = S\sqrt{3}$
$\frac{45}{\sqrt{3}} = \frac{S\sqrt{3}}{\sqrt{3}}$
$\frac{45}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = S$

$\frac{45\sqrt{3}}{3} = S$
$15\sqrt{3} = S$

7) In $\triangle PKN$, $PN = 14$ inches, $m\angle N = 30°$, and $m\angle K = 90°$. Which is closest to the perimeter of $\triangle PKN$?

F   42 in.
G   33 in.
H   31 in.
J   28 in.

Draw and label your picture.

$N \quad 30 \quad 14 = 25$
$S\sqrt{3}$
$7\sqrt{3}$
$S = 7$
$K \quad S = 7 \quad P \quad 60°$

Perimeter $= 7 + 14 + 7\sqrt{3}$

8) Grain elevators are conveyor belts used throughout the Midwest to take produce, like wheat, to the top of a silo for storage. How long would the belt of a grain elevator need to be if the bottom is 50 feet from the base of a silo that is 50 feet high? Give the exact answer (simplest radical form) and round your answer to the nearest tenth.
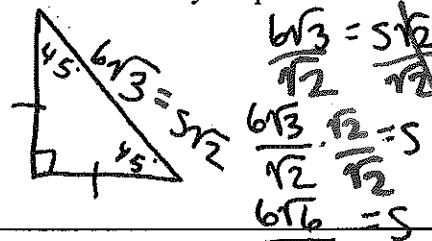
$S\sqrt{2} = 50\sqrt{2}$
$S\sqrt{2} = 70.7$

Draw and label your picture.
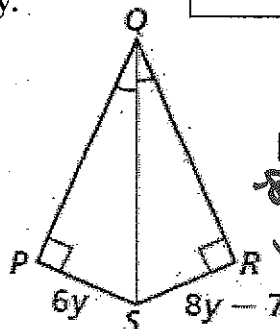
conveyor belt
$S\sqrt{3}$
$45°$
silo
$50 = S$
45
$50 = S$
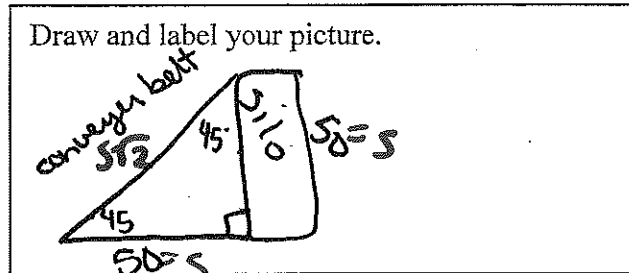
9.) The length of the hypotenuse of a right isosceles triangle is $6\sqrt{3}$. What is the perimeter of the triangle? Give the exact answer (simplest radical form)

Draw and label your picture.

$45° \quad 6\sqrt{3} = S\sqrt{2}$
$45°$

$\frac{6\sqrt{3}}{\sqrt{2}} = \frac{S\sqrt{2}}{\sqrt{2}}$
$\frac{6\sqrt{3}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = S$
$\frac{6\sqrt{6}}{2} = S$
$\boxed{3\sqrt{6} = S}$

10.) Find the value of y.

y = _____

$6y = 8y - 7$
$-8y \quad -8y$
$\frac{-2y}{-2} = \frac{-7}{-2}$
$y = 7/2$

O
$P \quad R$
$6y \quad S \quad 8y - 7$

11.) In $\triangle ABC$, $\overline{AD} \perp \overline{BC}$ and $\overline{AE}$ bisects $\angle BAC$, $m\angle B = 66°$, and $m\angle C = 36°$. Find $m\angle DAE$.
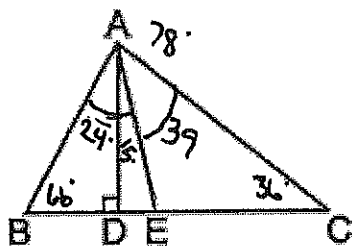
Measure of angle DAE = $15°$

12.) In $\triangle PQR$, $\overline{PQ} \cong \overline{PR}$, and $\overline{PS}$ bisects $\angle QPR$ and S lies on $\overline{QR}$. Which statement(s) must be true?

(A) $\overline{PS}$ is a perpendicular bisector of $\overline{QR}$.

(B) $\overline{PS}$ is perpendicular to $\overline{QR}$ but not a bisector of $\overline{QR}$.

(C) $\overline{PS}$ is a bisector of $\overline{QR}$ but not perpendicular to $\overline{QR}$.

(D) $\overline{PS}$ is neither a bisector of $\overline{QR}$ nor perpendicular to $\overline{QR}$.

13.) $\triangle CPR$ has vertices $C(15, 1)$, $P(9, 11)$, and $R(2, 1)$. Determine the coordinates of point A on $\overline{CP}$ so that $\overline{RA}$ is the median of $\triangle CPR$.

$P(9,11) \quad C(15,1)$

$A(\ 12\ ,\ 6\ )$ $M\left(\dfrac{9+15}{2}, \dfrac{1+11}{2}\right)$

What is the slope of RA? $\dfrac{5}{10} = \frac{1}{2}$

$y - y_1 = m(x - x_1)$

What is the equation of RA? $y - 6 = \frac{1}{2}(x - 12)$

14.) Using the picture below, find the value of x, then calculate the length of $\overline{LT}$.
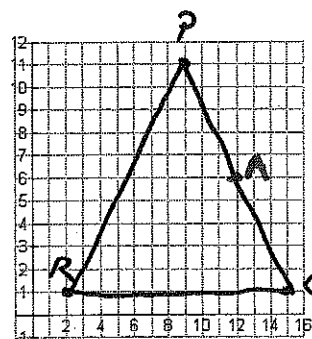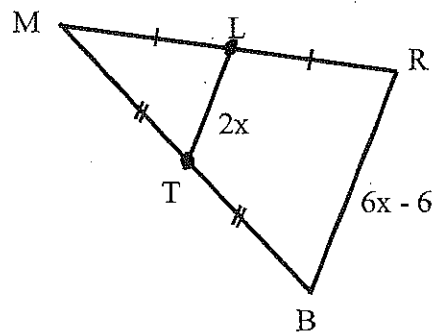
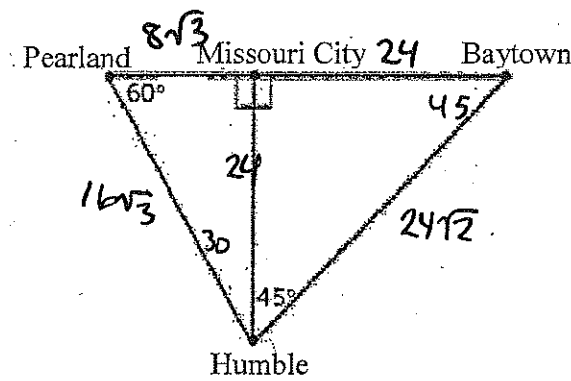$x = 3$

$LT = 6$

$4x = 6x - 6$
$6 = 2x$
$3 = x$

Name_____   Date_____

Test Review (Special Segments and Special Right Triangles)
Show work to receive credit!   Period_____

15.) The distance from Missouri City to Baytown is approximately 24 miles. What is the approximate distance from (A.) Humble to Pearland (B.) Missouri City to Pearland (C.) Baytown to Humble?
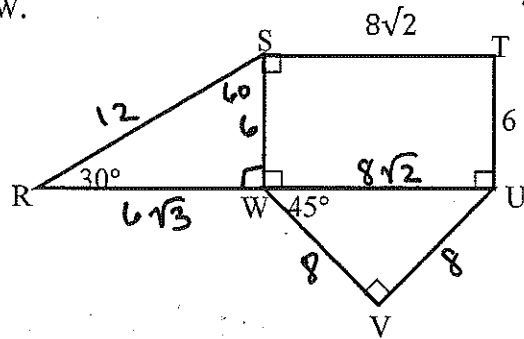
a. $16\sqrt{3}$
b. $8\sqrt{3}$
c. $24\sqrt{2}$

Pearland $8\sqrt{3}$ Missouri City 24 Baytown

60°   45°

$16\sqrt{3}$ 24 $24\sqrt{2}$

30   45°

Humble

$\dfrac{24}{\sqrt{3}} = \dfrac{s\sqrt{3}}{\sqrt{3}}$

$\dfrac{24}{\sqrt{3}} \cdot \dfrac{\sqrt{3}}{\sqrt{3}} = s$

$\dfrac{24\sqrt{3}}{3} = s$

$8\sqrt{3} = s$

16.) Find the perimeter of hexagon RSTUVW.

$8\sqrt{2}$

S   T

12   60   6

30° $8\sqrt{2}$

R $6\sqrt{3}$ W   45°   U

8   8

V

Perimeter = __$34 + 6\sqrt{3} + 8\sqrt{2}$__

17.) Triangle ABC is shown below.

A

45°   10 cm

45°

B   C

$\dfrac{b}{\sqrt{2}} = \dfrac{s\sqrt{2}}{\sqrt{2}}$

$\dfrac{10\sqrt{2}}{2} = s$

$5\sqrt{2} = s$

$7.07 = s$
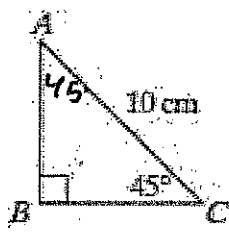
Approximately how much longer is $\overline{AC}$ than $\overline{AB}$?   3 cm

18.) The diameter of the circle is 12. Find QS.

Q

$6\sqrt{2}$

6

R   6   T   6   S

6

$6\sqrt{2}$

U

QS = __$6\sqrt{2}$__