FINAL EXAM – Review Worksheet #3

Topics
Angle Measures in Polygons
Pythagorean Theorem
Volume, Surface Area, etc.
Special Types of Angles

A. Find the missing angle measure.

1) \[
\begin{align*}
\text{Total} &= 180^\circ \\
64^\circ + 24^\circ &= 88^\circ \text{ so far...}
\end{align*}
\]

2) \[
\begin{align*}
\text{Total} &= 360^\circ \\
156^\circ + 32^\circ &= 288^\circ \text{ so far...}
\end{align*}
\]

3) \[
\begin{align*}
\text{Total} &= 360^\circ \\
90^\circ + 54^\circ &= 144^\circ \text{ so far...}
\end{align*}
\]

4) \[
\begin{align*}
\text{Total} &= 180^\circ \\
123^\circ + 50^\circ &= 173^\circ \text{ so far...}
\end{align*}
\]

5) In a pentagon, each of two angles measures \(76^\circ\). Another angle measures \(111^\circ\), and a fourth angle measures \(146^\circ\). What is the measure of the missing angle?

\[
\begin{align*}
\text{Total} &= 540^\circ \\
146^\circ + 76^\circ + 111^\circ &= 333^\circ \text{ so far...}
\end{align*}
\]

6) What is the sum of the measure of the interior angles of an octagon?

\[
\text{sum} = 180(n-2) = 180(8-2) = 1080^\circ
\]

7) What is the measure of each interior angle of a regular decagon?

\[
\text{sum} = 180(n-2) = 180(10-2) = 1440^\circ
\]

\[
\frac{\text{Total}}{\text{# angles}} = \frac{1440}{10} = 144^\circ
\]
8) Name the polygon whose interior angle measures have a sum of 720°.

\[
\text{sum} = 180(n-2) \\
720 = 180(n-2) \\
\frac{720}{180} = \frac{180(n-2)}{180} \\
4 = n - 2 \\
+2 \\
6 = n \\
\]

Hexagon

B. Pythagorean Theorem

9) Find the length of "x".

\[\begin{align*}
a^2 + b^2 &= c^2 \\
10^2 + 24^2 &= c^2 \\
100 + 576 &= c^2 \\
676 &= c^2 \\
take \text{ square root} \\
c &= 26
\end{align*}\]

10) Find the length of "k".

\[\begin{align*}
a^2 + b^2 &= c^2 \\
21^2 + 28^2 &= c^2 \\
441 + 784 &= c^2 \\
1225 &= c^2 \\
take \text{ square root} \\
c &= 35
\end{align*}\]

11) A 20 ft-ladder is leaning up against a wall. The bottom of the ladder is 4 feet from the bottom of the wall. How far up the wall does the top of the ladder touch the wall? (Round your answer to the nearest tenths place.)

\[\begin{align*}
a^2 + b^2 &= c^2 \\
x^2 + 4^2 &= 20^2 \\
x^2 + 16 &= 400 \\
-16 &= -16 \\
x^2 &= 384 \\
take \text{ square root} \\
x &\approx 19.6 \text{ ft}
\end{align*}\]

12) Jim drives 36 kilometers north, then 48 kilometers east. What is the diagonal distance from his starting point?

\[\begin{align*}
a^2 + b^2 &= c^2 \\
36^2 + 48^2 &= c^2 \\
1296 + 2304 &= c^2 \\
3600 &= c^2 \\
take \text{ square root} \\
c &= 60 \text{ km}
\end{align*}\]
C. Areas, Volumes, etc.

13) Find the area.

\[ A = \frac{1}{2} h (a+b) \]
\[ A = \frac{1}{2} \cdot 7 (12 + 16) \]
\[ A = \frac{1}{2} \cdot 7 \cdot 28 \]
\[ A = 98 \text{ cm}^2 \]

14) Find the surface area.

\[ SA = 2lw + 2lh + 2wh \]
\[ = 2(8)(3.5) + 2(8)(10.4) + 2(3.5)(10.4) \]
\[ = 35 + 104 + 72.8 \]
\[ = 211.8 \text{ m}^2 \]

16) Find the volume.

\[ V = lwh \]
\[ V = 8 \cdot 6 \cdot 3 \]
\[ V = 144 \text{ ft}^3 \]

17) Find the circumference.

\[ C = 2\pi r \]
\[ C = 2(3.14)(3.5) \]
\[ C = 21.98 \text{ yd} \]

15) Find the area.

\[ A = \frac{1}{2} bh \]
\[ A = \frac{1}{2} \cdot 21 \cdot 30 \]
\[ A = 315 \text{ cm}^2 \]

18) Find the volume.

\[ V = \pi r^2 h \]
\[ V = (3.14)(8.5)^2(8) \]
\[ V = (3.14)(72.25)(8) \]
\[ V = 1814.92 \text{ mm}^3 \]
D. Special Types of Angles

19) What is the complement of a $74^\circ$ angle? $16^\circ$

20) What is the supplement of a $28^\circ$ angle? $152^\circ$

21) What angle is adjacent to $\angle BAR$? many possible answers...

22) What angle is complementary to $\angle BAC$? $\angle CAG$

23) $\angle BAC$ and what angle are vertical angles? $\angle FAR$

24) What angle is supplementary to $\angle CAG$? $\angle RAG$

25) $\angle 1$ and what other angle are vertical angles? $\angle 4$

26) $\angle 6$ and what other angle are alternate interior angles? $\angle 3$

27) $\angle 1$ and what other angle are corresponding angles? $\angle 5$

28) $\angle 4$ and what other angle are corresponding angles? $\angle 8$

29) If $m \angle 4 = 38^\circ$,

$m \angle 1 = 38^\circ$, $m \angle 3 = 142^\circ$, $m \angle 6 = 142^\circ$, $m \angle 8 = 38^\circ$

$m \angle 2 = 142^\circ$, $m \angle 5 = 38^\circ$, $m \angle 7 = 142^\circ$