Math 60, Sections 2.1-2.2 Group Activity Name: Answers

Section 2.1 Variables and Evaluating Expressions

1. Evaluate each expression for $x = 7$ and $y = -5$

a. $4(x-y)$

$= \cdots$

$= 48$

b. $2xy+3$

$= \cdots$

$= -67$

c. $\frac{40}{y} - \frac{7}{x}$

$= \cdots$

$= -9$

d. $\frac{3x+4y-1}{4y}$

$= \cdots$

$= 0$

e. y^2

$= \cdots$

$= 25$

f. $-y^2$

$= \cdots$

$= -25$

g. $3y - \sqrt{2(x+y)}$

$= \cdots$

$= -17$

h. $9+2|3y-7|$

$= \cdots$

$= 53$

Evaluating other formulas.

2. To convert a temperature measured in degrees Fahrenheit, F, to degrees Celsius, C, we use the formula $C = \frac{5}{9}(F - 32)$. Convert the room temperature of $68^\circ F$ to Celsius. Write your answer in a complete sentence including units.

A room temperature of 68°F is the same as 20°C.

3. The speed of a tsunami (in meters per second) can be modeled by $\sqrt{9.8d}$, where d is the depth of the tsunami (in meters). Determine the speed of a tsunami that has a depth of 80 m ~~to four significant digits~~.

A tsunami of depth 80m has speed $28 \frac{m}{s}$.

4. While camping, the height (in feet) inside a tent when you are d ft from the north side of the tent is given by the formula $h = -3|d - 4| + 7$. When you are 3 ft from the north side, what is the height of the tent?

When you are 3ft from the north side of the tent, the height of the tent is 4ft.

Section 2.2 Geometric Formulas

****Memorize the 8 formulas and their corresponding units****
Any additional formulas needed will be given to you and are included on the geometry reference sheet.

5. a. Find the volume of a can of coconut milk that has a diameter of 7 cm and a height of 11 cm.

radius is 3.5cm

i. The can's volume, in terms of π, is

$V = \pi r^2 h = \pi (3.5\text{cm})^2 (11\text{cm})$

$= \pi (12.25\text{cm}^2)(11\text{cm})$

$= \pi \cdot 134.75\ \text{cm}^3$

$= 134.75\pi\ \text{cm}^3$

ii. The can's volume, rounded to the hundredth's place is:

type 134.75 * π into calculator : 423.32961....

the volume is approximately $423.33\ \text{cm}^3$

b. Find the area of a studio apartment that is 22 feet long and 18 feet wide.

The studio apt. area is 396 square feet.

c. Find the circumference of a circular fountain that has a diameter of 5 feet.

i. The circumference, in terms of π, is

$C = 5\pi$ ft

ii. The circumference, rounded to the hundredth's place is:

$C \approx 15.71$ ft.

More Practice

6. Evaluate each expression for $a = 4$ and $b = -6$

a. $a + 4b^2$

= . . .

= 143

b. $5ab - 8a$

= . . .

= −152

c. $\frac{1}{2}a - \frac{1}{3}b$

= . . .

= 4

d. $\frac{2a - 3b + 10}{ab}$

= . . .

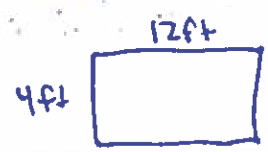
$= -\frac{3}{2}$

7. Use a geometric formula and the information given. Write your answer in a complete sentence, including units.

a. A garden bed has a length of 12 feet and a width of 4 feet. How much material would you need to make a border?

~~[illegible]~~

We need the perimeter.



4ft + 12ft + 4ft + 12ft

= 32 ft.

We need 32ft of border material.

b. When a backyard patio was built, the sod was dug out and then filled with sand before bricks were placed on top. The space where sand was filled measured 15 feet by 15 feet by 3 inches. How much sand was needed?

$V = l \cdot w \cdot d$ (ft³ = ft · ft · ft)

$= (15)(15)\left(\frac{1}{4}\right)$

$= 225\left(\frac{1}{4}\right)$

$= \frac{225}{1} \cdot \frac{1}{4}$

$= \frac{225}{4} = 56.25$ ft³

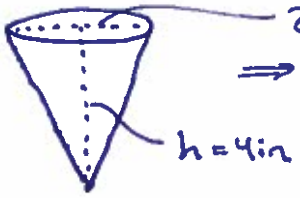
convert to feet

1 ft has 12 inches

$3\text{ in}\left(\frac{1\text{ ft}}{12\text{ in}}\right) = \frac{3}{12}\text{ ft} = \frac{1}{4}\text{ ft}$

c. A paper cone for drinking water has a base diameter of 2.5 inches and a height of 4 inches. How much water can the cone hold?

Write the answer in terms of π:



⇒ radius is 1.25 in

$V = \frac{1}{3}\pi r^2 h$ (note all lengths in inches!)

$= \frac{1}{3}\pi (1.25)^2 (4)$

$= \frac{1}{3}\pi (1.5625)(4)$

$= \frac{1}{3} \cdot \pi \cdot 6.25$

$= \frac{6.25}{3}\pi \approx 2.08\overline{3}\,\pi$

There are $2.08\overline{3}\,\pi$ cubic inches of water in the cone.

Write the answer rounded to the nearest hundredths place:

$2.08\overline{3} \cdot \pi \approx 6.54498\ldots$

≈ 6.54

That's about 6.54 in³ of water.