1) Evaluate each of the following.

a) $-1\frac{5}{6}+\left(-2\frac{2}{3}\right)$

b) $-2\frac{1}{4}-3\frac{3}{8}$

c) $\left(-2\frac{1}{6}\right)^2$

d) $\left(-1\frac{1}{6}\right)\div\left(-\frac{4}{9}\right)$

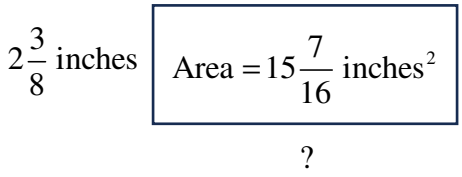
2) Evaluate each of the following.

a) $\left(\frac{4}{3}-\frac{1}{5}\right)\left(\frac{3}{2}+\frac{5}{6}\right)$

b) $\left(-2\frac{1}{4}\right)^2\div\left(-\frac{3}{4}\times\frac{1}{3}\right)$

3) A carpenter needs to cut different lengths of wood from a 10 ft plank of wood. The carpenter needs the following lengths of wood: $2\frac{1}{2}$ ft, $1\frac{3}{16}$ ft, $\frac{3}{8}$ ft, and $3\frac{1}{4}$ ft. After making these cuts, what length of the original plank remains?

4) The area of a rectangle is $15\frac{7}{16}$ square inches. If the rectangle's width is $2\frac{3}{8}$ inches, determine the length of the rectangle.



5) Use a checkmark (✓) to identify each of the following statements as either true or false.

	TRUE	FALSE
$2x-5x-(-x)$ is equal to $4x$.		
The expression $(2x+5)-(-6x+1)$ is equal to $2x+5+6x-1$.		
$-4a^2b^2$ and $3b^2a^2$ are like terms.		
$-3x^2$ is equivalent to $-9x$.		
To solve the equation $x-2=8$, we need to subtract 2 from both sides.		
$x=-5$ is the solution to $-10x=50$.		

6) Joan claimed that $7x+2y$ is equal to $9xy$. Is Joan's claim correct? Explain.

7) Simplify each expression by collecting like terms.

a) $8x-4+2x-6$ b) $10x^2-(-3x)+4x-6x^2$ c) $\frac{1}{8}x+\frac{5}{9}y-\frac{3}{8}x+\frac{4}{9}y$

d) $-2x^2-7x-13-4x^2-11x+17$ e) $4x-8y-6-3x+7y-5$

8) Simplify each expression.

a) $(2x^2 - 5x + 9) + (-4x^2 + 5x - 5)$

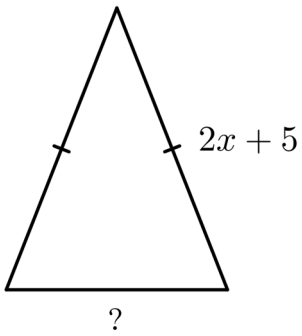
b) $(3x - 6y + 7) - (-5x + 2y - 2)$

9) Use your simplified expressions from question #8 to evaluate each for $x = 2$ and $y = -1$.

a)

b)

10) For the isosceles triangle shown below, an algebraic representation is given for the length of a side. If the perimeter of the triangle is $5x + 13$, determine a simplified expression for the length of bottom side.



11) Solve each equation. Show your work.

a) $x - (-3) = -9$

b) $x - 9 + 5 = 2 - 16$

c) $5x - 9x = 6 - 42$

d) $-16 + 2 = -9x + 2x$

e) $-3 - (-12) = 2 + x - 5$

12) Varsha claims that any equation can have at most one solution. Is Varsha's claim correct? Explain.

13) During his hospitality class, Justin baked a certain number of cookies, represented by x. Lily baked three times as many cookies as Justin, and Paige baked twice as many cookies as Lily. Altogether, the three students made a total of 50 cookies. Determine the number of cookies that each student baked.

14) Will used Python to write a program for calculating the volume of a cylinder based on radius and height values entered by the user. His code is shown below.

```
# Read values for radius and height from user.
radius=input("Enter the radius in metres: ")
height=input("Enter the height in metres: ")

# Calculate the volume of the cylinder.
volume=pi*radius**2*height

# Round the volume to one decimal place.
rounded=round(volume,1)

# Display the volume of the cylinder.
print("The volume of the cylinder is",rounded,"square metres.")
```

a) How many variables are used in Will's program?

b) Will's program contains several errors that are preventing it from running properly. Describe the problems with Will's program.

c) If Will corrects the problems with his program, what will its output be when a radius value of 6.5 and a height value of 4.2 are entered?