$\qquad$

To receive credit, you must show your work.

1. Evaluate WITHOUT a calculator.
a.

$$
\begin{gathered}
12+2 * 3 \\
12+6
\end{gathered}
$$

18
b.

$$
\begin{gathered}
5+2\left(3+2^{2}\right) \\
5+2(3+4) \\
5+2(7) \\
5+14
\end{gathered}
$$

$$
19
$$

c.

$$
\begin{gathered}
-3^{2}+5+4 * 2 \\
-9+5+8
\end{gathered}
$$

4
d.

$$
\begin{gathered}
-5-(-4)+(-10)-(-2)(3 \\
-5+4-10+6 \\
-5
\end{gathered}
$$

e.

$$
\begin{gathered}
12 \div 4 * 3-5 \\
3 * 3-5 \\
9-5
\end{gathered}
$$

4
f.

$$
\begin{gathered}
3[5+6(7-3)+7] \\
3[5+6(4)+7] \\
3[5+24+7] \\
3[36] \\
108
\end{gathered}
$$

$\qquad$
2. Simplify by combining like terms.
a.

$$
\begin{gathered}
3 a^{2}-2 b^{2}-7 a^{2}-3 b^{2} \\
-4 a^{2}-5 b^{2}
\end{gathered}
$$

b.

$$
\begin{gathered}
\frac{1}{5} a b^{2}-\frac{3}{10} a b^{2}+\frac{2}{5} a b^{2}+\frac{7}{10} a b^{2} \\
\frac{2}{10} a b^{2}-\frac{3}{10} a b^{2}+\frac{4}{10} a b^{2}+\frac{7}{10} a b^{2} \\
\frac{10}{10} a b^{2} \\
a b^{2}
\end{gathered}
$$

c.

$$
\begin{gathered}
3\left(2 u^{2}+1\right)+4\left(u^{2}-5\right) \\
6 u^{2}+3+4 u^{2}-20 \\
10 u^{2}-17
\end{gathered}
$$

d.

$$
\begin{gathered}
3(2 x-3 y)-4(3 x+5 y)-x \\
6 x-9 y-12 x-20 y-x \\
-7 x-29 y
\end{gathered}
$$

e.

$$
\begin{gathered}
-5\left(x^{2}-4\right)-2\left(3 x^{2}+6\right)+\left(2 x^{2}-1\right) \\
-5 x^{2}+20-6 x^{2}-12+2 x^{2}-1 \\
-9 x^{2}+7
\end{gathered}
$$

3. Translate each English phrase into an algebraic expression.
a. Four increased by twice a number

$$
4+2 n
$$

b. Six less than two-thirds of a number

$$
\frac{2}{3} n-6
$$

c. Ten times the difference of a number and 14

$$
10(n-14)
$$

d. Eight subtracted from the quotient of a number and seven

$$
\frac{n}{7}-8
$$

e. The quotient of a number and three less than the number

$$
\frac{n}{n-3}
$$

