10. Factor each quadratic expression.
a. $x^{2}+8 x+15=$ $\qquad$

$$
\begin{aligned}
& x^{2}-8 x+15= \\
& x^{2}+2 x-15= \\
& x^{2}-2 x-15=
\end{aligned}
$$

$\qquad$
$\qquad$
$\qquad$
b. $x^{2}+10 x+24=$ $\qquad$
$x^{2}-10 x+24=$ $\qquad$
$x^{2}+2 x-24=$ $\qquad$
$x^{2}-2 x-24=$ $\qquad$
11. Elaine, Maggie, and Grace were asked to factor the trinomial $15+2 x-x^{2}$.


Who's correct? Determine which student is correct and explain how that student determined the factored form. If a student is not correct, state why and make the correction.
12. Marilyn and Jake were working together to factor the trinomial $4 x^{2}+22 x+24$.

They first noticed that there was a greatest common factor and rewrote the trinomial as

$$
2\left(2 x^{2}+11 x+12\right) .
$$

Next, they considered the factor pairs for $2 x^{2}$ and the factor pairs for 12 .
$2 x^{2}:(2 x)(x)$
12: (1) (12)
(2) (6)
(3) (4)

Marilyn listed all out all the possible combinations.

$$
\begin{aligned}
& 2(2 x+1)(x+12) \\
& 2(2 x+12)(x+1) \\
& 2(2 x+2)(x+6) \\
& 2(2 x+6)(x+2) \\
& 2(2 x+3)(x+4) \\
& 2(2 x+4)(x+3)
\end{aligned}
$$

Jake immediately eliminated four out of the six possible combinations because the terms of one of the linear expressions contained common factors.

$$
\begin{aligned}
& 2(2 x+1)(x+12) \\
& 2(2 x-12)(x-1) \\
& 2(2 x-2)(x-6) \\
& 2(2 x-6)(x+2) \\
& 2(2 x+3)(x+4) \\
& 2(2 x-4)(x-3)
\end{aligned}
$$

Explain Jake's reasoning. Then circle the correct factored form of $4 x^{2}+22 x+24$.

## Talk the Talk

1. Factor each polynomial completely. First, determine if there is a greatest common factor, and then write the polynomial in factored form.
a. $x^{2}-9 x-10$
b. $4 x^{2}-20 x+16$
c. $-20+9 b-b^{2}$
d. $3 y^{2}-8 y-3$
e. $7 x^{2}-7 x-56$
f. $3 y^{3}-27 y^{2}-30 y$
2. Use the word bank to complete each sentence. Then explain your reasoning.

| always | sometimes | never |
| :---: | :---: | :---: |

a. The product of two linear expressions will $\qquad$ be a trinomial with a degree of 3 .
b. The two binomial factors of a quadratic expression will $\qquad$ have a degree of one.
c. The factoring of a quadratic expression will $\qquad$ result in two binomials.

