Practice Run

1. Determine the greatest common factor of $22w^4u^3v$, $11w^4u^2v$, and $121w^3u^2v^2$.

2. Factor the following binomials:

   a. $33x^2 - 3x$

   b. $18t^2 - 36t$

Compare your answers.

1. Determine the greatest common factor of $22w^4u^3v$, $11w^4u^2v$, and $121w^3u^2v^2$.

$22w^4u^3v$	$11w^4u^2v$	$121w^3u^2v^2$
$= 11 \bullet 2 \bullet w \bullet w \bullet w \bullet w \bullet u \bullet u \bullet u \bullet v$	$= 11 \bullet w \bullet w \bullet w \bullet w \bullet u \bullet u \bullet v$	$= 11 \bullet 11 \bullet w \bullet w \bullet w \bullet u \bullet u \bullet v \bullet v$

=	11 •	2 •	w •	w •	w •	w •	u •	u •	u •	v
=	11 •		w •	w •	w •	w •	u •	u •		v
=	11 •	11 •	w •	w •	w •		u •	u •	v •	v

GCF = $11w^3u^2v$

2. Factor the following binomials:

a. $33x^2 - 3x$ $= \frac{33x^2}{3x} - \frac{3x}{3x} = 11x - 1$

$= 3x(11x - 1)$

b. $18t^2 - 36t$ $= \frac{18t^2}{18t} - \frac{36t}{18t} = t - 2$

$= 18t(t - 2)$

Factoring trinomials of the form $ax^2 + bx + c$ where $a = 1$

Factoring and expanding are reverse processes, so let's start by imagining multiplying two factors and then looking to see how you could work backwards from the product. Suppose a trinomial could be factored into $(x + p)$ and $(x + q)$.

Multiplying these factors gives

$$\begin{aligned}(x+p)(x+q) &= x^2 + px + qx + pq \\ &= x^2 + (p+q)x + pq\end{aligned}$$

Notice that $p + q$ is the b-value and pq is the c-value of the trinomial $ax^2 + bx + c$. This helpful result means that if there are two numbers, p and q, that add to give b and multiply to give c, then the trinomial $x^2 + bx + c$ can be factored as $(x + p)(x + q)$.