

Warm Up 2.8

Factor:

1) $x^2 + 8x + 16$

$= (x+4)(x+4)$

$a \cdot c = 16$	$b = 8$
$1 \cdot 16$	$1+16=17$
$2 \cdot 8$	$2+8=10$
$4 \cdot 4$	$4+4=8$

2) $x^2 + 6x - 16$

$= (x-2)(x+8)$

$a \cdot c = -16$	$b = 6$
$-1 \cdot 16$	$-1+16=15$
$-2 \cdot 8$	$-2+8=6$
$-4 \cdot 4$	$-4+4=0$

3) $x^2 - 10x + 16$

$= (x-2)(x-8)$

$a \cdot c = 16$	$b = -10$
$-1 \cdot -16$	-1
$-2 \cdot -8$	-10
$-4 \cdot -4$	-8

4) $x^2 - 15x - 16$

$= (x-16)(x+1)$

$a \cdot c = -16$	$b = -15$
$-16 \cdot 1$	$-16+1=-15$

5) $x^2 + x - 20$

$= (x-4)(x+5)$

$a \cdot c = -20$	$b = 1$
$-1 \cdot 20$	19
$-2 \cdot 10$	8
$-4 \cdot 5$	1

6) $x^2 + 12x + 20$

$= (x+2)(x+10)$

$a \cdot c = 20$	$b = 12$
$1 \cdot 20$	21
$2 \cdot 10$	12

7) $x^2 - 8x - 20$

$= (x-10)(x+2)$

$a \cdot c = -20$	$b = -8$
$-20 \cdot 1$	$-20+1=-19$
$-10 \cdot 2$	$-10+2=-8$
$-5 \cdot 4$	$-5+4=-1$

8) $x^2 - 21x + 20$

$= (x-1)(x-20)$

$a \cdot c = 20$	$b = -21$
$-1 \cdot -20$	$-1+(-20)=-21$

Change to vertex form: CTS

9) $y = x^2 - 2x + 5$

$y = x^2 - 2x + \frac{1}{4} + 5 - \frac{1}{4}$

$(\frac{b}{2})^2 = (\frac{-2}{2})^2 = (-1)^2 = 1$

$y = (x-1)^2 + 4$

10) $\frac{y}{2} = \frac{2x^2}{2} + \frac{20x}{2} + \frac{11}{2}$

$\frac{y}{2} = x^2 + 10x + 5.5$

$\frac{y}{2} = x^2 + 10x + \frac{25}{2} + 5.5 - \frac{25}{2}$

$(\frac{b}{2})^2 = (\frac{10}{2})^2 = (5)^2 = 25$

$2 \cdot (\frac{y}{2} = (x+5)^2 - 19.5)$

$y = 2(x+5)^2 - 39$