**PRACTICE**

Directions #1-6:  Factor completely.

1) $-4r^2 + 20r + 144$

$\times -36$
$+ -5$

$-4(r^2 - 5r - 36)$

$\boxed{-4(r-9)(r+4)}$

2) $4n^3 + 68n^2 + 288n$

$\times 72$
$+ 17$

$4n(n^2 + 17n + 72)$

$\boxed{4n(n+8)(n+9)}$

3) $20n^4 + 76n^3 + 48n^2$

$\times 60$
$+ 19$

$4n^2(5n^2 + 19n + 12)$

$\dfrac{4n^2(5n+15)(5n+4)}{5}$

$\dfrac{4n^2(5)(n+3)(5n+4)}{5}$

$\boxed{4n^2(n+3)(5n+4)}$

4) $42x^2 + 6x - 36$

$\times -42$
$+ 1$

$6(7x^2 + x - 6)$

$\dfrac{6(7x+7)(7x-6)}{7}$

$\dfrac{6(7)(x+1)(7x-6)}{7}$

$\boxed{6(x+1)(7x-6)}$

5) $-60x^2 + 15$

$\times -4$
$+ 0$

$-15(4x^2 - 1)$

$\dfrac{-15(4x-2)(4x+2)}{4}$

$\dfrac{-15(2)(2x-1)(2)(2x+1)}{4}$

$\boxed{-15(2x-1)(2x+1)}$

6) $8p^2 - 50$

$\times -100$
$+ 0$

$2(4p^2 - 25)$

$\dfrac{2(4p-10)(4p+10)}{4}$

$\dfrac{2(2)(2p-5)(2)(2p+5)}{4}$

$\boxed{2(2p-5)(2p+5)}$

Directions #7-10:  Solve each equation.
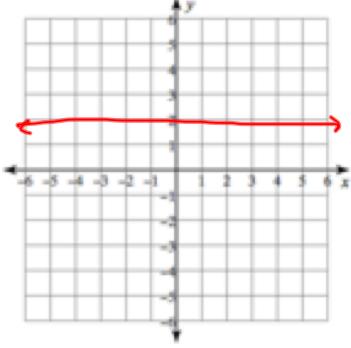
7) $8x^2 + 40x = 0$

$8x(x+5) = 0$

$8x = 0$  OR  $x+5 = 0$

$\boxed{x=0}$        $\boxed{x=-5}$

8) $3a^3 - 24a^2 = -42a + 3a^2$

$-3a^2 \quad +4a \quad -3a^2$
$+4a$

$3a^3 - 27a^2 + 42a = 0$

$3a(a^2 - 9a + 14) = 0$

$\times 14$
$+ -9$

$3a(a-7)(a-2) = 0$

$3a = 0$  OR  $a-7=0$  OR  $a-2=0$

$\boxed{a=0}$        $\boxed{a=7}$        $\boxed{a=2}$

9) $28k^2 - 192k = -144$

$+144 \qquad +144$

$28k^2 - 192k + 144 = 0$

$4(7k^2 - 48k + 36) = 0$

$4(7k-6)(7k-42) = 0$

$\times 252$
$+ -48$

$\dfrac{4(7k-6)(7k-42)}{7}$

$4(7k-6)(7)(k-6) = 0$

$4(7k-6)(k-6) = 0$

$k-6 = 0$

$\boxed{k=6}$

OR

$7k-6 = 0$
$7k = 6$
$\boxed{k = \frac{6}{7}}$

10) $6x^3 + 9x^2 = 60x$

$-60x \quad -60x$

$6x^3 + 9x^2 - 60x = 0$

$3x(2x^2 + 3x - 20) = 0$

$\times -40$
$+ 3$

$\dfrac{3x(2x+8)(2x-5)}{2} = \dfrac{3x(2)(x+4)(2x-5)}{2}$

$3x(x+4)(2x-5) = 0$

$3x = 0$  OR  $2x-5 = 0$  OR  $x+4 = 0$

$\boxed{x=0}$      $2x = 5$        $\boxed{y=-4}$

        $\boxed{x = \frac{5}{2}}$

| SKILLZ REVIEW | | |
|---|---|---|
| Graph. | List all pairs of numbers that multiply to the given number. | Which number pair contains the largest perfect square? |
| 1) $y = 2$ | 2) 45<br><br>$1 \cdot 45$<br>$3 \cdot 15$<br>$5 \cdot 9$ | 3) Use 45<br><br>$5 \cdot 9$<br><br>$3 \cdot 3$ |