Math 3

Name_____ ID: 1

Prerequisite Skills Unit 2 Lesson 2

Date_____ Period____

Solve each equation by factoring.

1) $v^2 - 5v - 14 = 0$

$(v-7)(v+2)=0$

mult to...
-14
-7 ✕ 2
-5
...add to

$v-7=0 \quad v+2=0$
$+7 \ +7 \quad -2 \ -2$
$\boxed{v=7 \quad v=-2}$

2) $n^2 + 9n + 20 = 0$

$(n+5)(n+4)=0$

mult to...
20
5 ✕ 4
9
add to...

$n+5=0 \quad n+4=0$
$-5 \ -5 \quad -4 \ -4$
$\boxed{n=-5 \quad n=-4}$

3) $n^2 + 14n + 48 = 0$

$(n+8)(n+6)=0$

mult to...
48
8 ✕ 6
14
...add to

$n+8=0 \quad n+6=0$
$-8 \ -8 \quad -6 \ -6$
$\boxed{n=-8 \quad n=-6}$

4) $k^2 - 11k + 24 = 0$

$(k-3)(k-8)=0$

mult to...
24
-3 ✕ -8
-11
...add to

$k-3=0 \quad k-8=0$
$+3 \ +3 \quad +8 \ +8$
$\boxed{k=3 \quad k=8}$

5) $3x^2 - x - 10 = 0$ mult

$x^2 - x - 30 = 0$

$(x - 6)(x + 5) = 0$
$\quad\quad \overline{3} \quad\quad \overline{3}$

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

$x - 2 = 0 \quad 3x + 5 = 0$

$\boxed{x = 2 \quad x = -5/3}$

mult to...
-30
$-6 \quad 5$
-1
...add to

6) $3x^2 - 11x - 4 = 0$ mult

$x^2 - 11x - 12 = 0$

$(x - 12)(x + 1) = 0$
$\quad\quad\quad \overline{3} \quad\quad \overline{3}$

$(x - 4)(3x + 1) = 0$

$x - 4 = 0 \quad 3x + 1 = 0$

$\boxed{x = 4 \quad x = -1/3}$

mult to...
-12
$-12 \quad 1$
-11
...add to

7) $5x^2 + 2x - 3 = 0$ mult

$x^2 + 2x - 15 = 0$

$(x + 5)(x - 3) = 0$
$\quad\quad \overline{5} \quad\quad \overline{5}$

$(x + 1)(5x - 3) = 0$

mult to...
-15
$5 \quad -3$
2
...add to

$x + 1 = 0 \quad 5x - 3 = 0$

$\boxed{x = -1 \quad x = 3/5}$

8) $5p^2 + 12p - 9 = 0$ mult

$p^2 + 12p - 45 = 0$

$(p + 15)(p - 3) = 0$
$\quad\quad\quad \overline{5} \quad\quad \overline{5}$

$(p + 3)(5p - 3) = 0$

mult to...
-45
$15 \quad -3$
12
...add to

$p + 3 = 0 \quad 5p - 3 = 0$

$\boxed{p = -3 \quad p = 3/5}$

9) $x^2 - 3x = 0$

$x(x-3) = 0$

$\boxed{x = 0}$ $x - 3 = 0$
$\; +3 \;\; +3$
$\boxed{x = 3}$

10) $r^2 - 7r = 0$

$r(r-7) = 0$

$\boxed{r = 0}$ $r - 7 = 0$
$\; +7 \;\; +7$
$\boxed{r = 7}$

-1-

11) $m^2 + m = 0$

$m(m+1) = 0$

$\boxed{m = 0}$ $m + 1 = 0$
$\; -1 \;\; -1$
$\boxed{m = -1}$

12) $k^2 + 3k = 0$

$k(k+3) = 0$

$\boxed{k = 0}$ $k + 3 = 0$
$\; -3 \;\; -3$
$\boxed{k = -3}$

Solve each equation by taking square roots.

13) $16p^2 + 1 = 26$

$$\underline{-1 \quad -1}$$

$$\frac{16p^2}{16} = \frac{25}{16}$$

$$\sqrt{1p^2} = \sqrt{\frac{25}{16}}$$

$$p = \pm\sqrt{\frac{25}{16}}$$

$$\boxed{p = \pm\frac{5}{4}}$$

14) $4x^2 - 3 = 61$

$$\underline{+3 \quad +3}$$

$$\frac{4x^2}{4} = \frac{64}{4}$$

$$\sqrt{x^2} = \sqrt{16}$$

$$\boxed{x = \pm4}$$

15) $5n^2 - 5 = 120$

$$\underline{+5 \quad +5}$$

$$\frac{5n^2}{5} = \frac{125}{5}$$

$$\sqrt{n^2} = \sqrt{25}$$

$$\boxed{n = \pm5}$$

16) $25x^2 - 5 = -4$

$$\underline{+5 \quad +5}$$

$$\frac{25x^2}{25} = \frac{1}{25}$$

$$\sqrt{x^2} = \sqrt{\frac{1}{25}}$$

$$\boxed{x = \pm\frac{1}{5}}$$

Solve each equation with the quadratic formula. $\frac{-B \pm \sqrt{B^2 - 4AC}}{2A}$

17) $n^2 - 2n - 3 = 0$

$A = 1 \quad B = -2 \quad C = -3$

$\frac{-(-2) \pm \sqrt{(-2)^2 - 4(1)(-3)} \to 16}{2(1)}$

$\frac{2 \pm \sqrt{16}}{2} \to \frac{2 \pm 4}{2}$

$\frac{2 + 4}{2} = 3$

$\frac{2 - 4}{2} = -1$

18) $2n^2 + 3n - 5 = 0$

$A = 2 \quad B = 3 \quad C = -5$

$\frac{-(3) \pm \sqrt{(3)^2 - 4(2)(-5)} \to 49}{2(2)}$

$\frac{-3 \pm \sqrt{49}}{4} \to \frac{-3 \pm 7}{4}$

$\frac{-3 + 7}{4} = 1$

$\frac{-3 - 7}{4} = \frac{-10}{4} = \frac{-5}{2}$

19) $n^2 - 4n - 4 = 0$

$A = 1 \quad B = -4 \quad C = -4$

$\frac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(-4)} \to 32}{2(1)}$

$\frac{4 \pm \sqrt{32}}{2} \to \frac{4 \pm 4\sqrt{2}}{2} \to 2 \pm 2\sqrt{2}$

20) $2m^2 - m - 6 = 0$

$A = 2 \quad B = -1 \quad C = -6$

$\frac{-(-1) \pm \sqrt{(-1)^2 - 4(2)(-6)} \to 49}{2(2)}$

$\frac{1 \pm \sqrt{49}}{4} \to \frac{1 \pm 7}{4}$

$\frac{1 + 7}{4} \to 2$

$\frac{1 - 7}{4} = \frac{-6}{4} = \frac{-3}{2}$