

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...
~~$\begin{matrix} -14 \\ -7 & 2 \\ -5 \end{matrix}$~~

$$\begin{array}{l} v-7=0 \\ \underline{+7 \quad +7} \\ v=7 \end{array} \quad \begin{array}{l} v+2=0 \\ \underline{-2 \quad -2} \\ v=-2 \end{array}$$

...add to

| | |
|-------|--------|
| $v=7$ | $v=-2$ |
|-------|--------|

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

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

mult to...
~~$\begin{matrix} 20 \\ 5 & 4 \\ 9 \end{matrix}$~~

$$\begin{array}{l} n+5=0 \\ \underline{-5 \quad -5} \\ n=-5 \end{array} \quad \begin{array}{l} n+4=0 \\ \underline{-4 \quad -4} \\ n=-4 \end{array}$$

add to...

| | |
|--------|--------|
| $n=-5$ | $n=-4$ |
|--------|--------|

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

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

mult to...
~~$\begin{matrix} 48 \\ 8 & 6 \\ 14 \end{matrix}$~~

$$\begin{array}{l} n+8=0 \\ \underline{-8 \quad -8} \\ n=-8 \end{array} \quad \begin{array}{l} n+6=0 \\ \underline{-6 \quad -6} \\ n=-6 \end{array}$$

...add to

| | |
|--------|--------|
| $n=-8$ | $n=-6$ |
|--------|--------|

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

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

mult to...
~~$\begin{matrix} 24 \\ -3 & -8 \\ -11 \end{matrix}$~~

$$\begin{array}{l} k-3=0 \\ \underline{+3 \quad +3} \\ k=3 \end{array} \quad \begin{array}{l} k-8=0 \\ \underline{+8 \quad +8} \\ k=8 \end{array}$$

...add to

| | |
|-------|-------|
| $k=3$ | $k=8$ |
|-------|-------|

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

$$x^2 - x - 30 = 0$$

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

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

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

$$x = 2 \quad x = -\frac{5}{3}$$

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

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

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

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

mult to...

$$\begin{array}{r} -30 \\ \times \\ -6 \quad 5 \\ \hline -1 \end{array}$$

...add to

mult to...

$$\begin{array}{r} -15 \\ \times \\ 5 \quad -3 \\ \hline 2 \end{array}$$

...add to

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

$$x = -1 \quad x = \frac{3}{5}$$

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

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

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

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

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

$$x = 4 \quad x = -\frac{1}{3}$$

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

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

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

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

mult to...

$$\begin{array}{r} -12 \\ \times \\ -12 \quad 1 \\ \hline -11 \end{array}$$

...add to

mult to...

$$\begin{array}{r} -45 \\ \times \\ 15 \quad -3 \\ \hline 12 \end{array}$$

...add to

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

$$p = -3 \quad p = \frac{3}{5}$$

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

$$\underline{x(x-3)} = 0$$

$$x=0$$

$$x-3=0$$
$$\begin{array}{r} +3 \\ +3 \\ \hline \end{array}$$

$$x=3$$

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

$$r(r-7) = 0$$

$$r=0$$

$$r-7=0$$
$$\begin{array}{r} +7 \\ +7 \\ \hline \end{array}$$

$$r=7$$

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$$11) m^2 + m = 0$$

$$m(m+1) = 0$$

$$m=0$$

$$m+1=0$$
$$\begin{array}{r} -1 \\ -1 \\ \hline \end{array}$$

$$m=-1$$

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

$$k(k+3) = 0$$

$$k=0$$

$$k+3=0$$
$$\begin{array}{r} -3 \\ -3 \\ \hline \end{array}$$

$$k=-3$$

Solve each equation by taking square roots.

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

$$\begin{aligned} \frac{16p^2}{16} &= \frac{27}{16} \\ p^2 &= \frac{27}{16} \\ p &= \pm \sqrt{\frac{27}{16}} \end{aligned}$$

$$p = \pm \frac{\sqrt{27}}{4}$$

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

$$\begin{aligned} \frac{4x^2}{4} &= \frac{64}{4} \\ x^2 &= 16 \\ x &= \pm 4 \end{aligned}$$

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

$$\begin{aligned} \frac{5n^2}{5} &= \frac{125}{5} \\ n^2 &= 25 \\ n &= \pm 5 \end{aligned}$$

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

$$\begin{aligned} \frac{25x^2}{25} &= \frac{1}{25} \\ x^2 &= \frac{1}{25} \\ x &= \pm \frac{1}{5} \end{aligned}$$

Solve each equation with the quadratic formula.

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

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

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

$$\frac{2 \pm \sqrt{16}}{2} \rightarrow \frac{2 \pm 4}{2} \rightarrow \begin{cases} \frac{2+4}{2} = 3 \\ \frac{2-4}{2} = -1 \end{cases}$$

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

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

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

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

$\frac{-B \pm \sqrt{B^2 - 4AC}}{2A}$

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

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

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

$$\frac{-3 \pm \sqrt{49}}{4} \rightarrow \frac{-3 \pm 7}{4} \rightarrow \begin{cases} \frac{-3+7}{4} = 1 \\ \frac{-3-7}{4} = \frac{-10}{4} = -\frac{5}{2} \end{cases}$$

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

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

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

$$\frac{1 \pm \sqrt{49}}{4} \rightarrow \frac{1 \pm 7}{4} \rightarrow \begin{cases} \frac{1+7}{4} = 2 \\ \frac{1-7}{4} = \frac{-6}{4} = -\frac{3}{2} \end{cases}$$