

Practice 4.2 Part 2 ~ Factoring to Solve Quadratic Equations

Solve each equation by factoring.

1) $(n-2)(n-6) = 0$

$n-2=0$

$n=2$

$n-6=0$

$n=6$

2) $(3v-5)(2v-1) = 0$

$3v-5=0$

$\frac{3v}{3} = \frac{5}{3}$

$v = \frac{5}{3}$

$2v-1=0$

$\frac{2v}{2} = \frac{1}{2}$

$v = \frac{1}{2}$

3) $6(p+2)(p+5) = 0$

$p+2=0$

$p=-2$

$p+5=0$

$p=-5$

4) $8(8n-3)(5n+2) = 0$

$8n-3=0$

$8n=3$

$n = \frac{3}{8}$

$5n+2=0$

$5n=-2$

$n = -\frac{2}{5}$

5) $k^2 - 2k - 24 = 0$

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

$k-6=0$

$k=6$

$k+4=0$

$k=-4$

6) $x^2 - 8x + 7 = 0$

$(x-7)(x-1) = 0$

$x-7=0$

$x=7$

$x-1=0$

$x=1$

7) $x^2 + 10x + 33 = 8$
-8 -8

$x^2 + 10x + 25 = 0$

$(x+5)(x+5) = 0$

$x+5=0$

$x=-5$

8) $b^2 + 10b + 30 = 6$
-6 -6

$b^2 + 10b + 24 = 0$

$(b+6)(b+4) = 0$

$b+6=0$

$b=-6$

$b+4=0$

$b=-4$

9) $x^2 = -14x - 48$

$$x^2 + 14x + 48 = 0$$

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

$$\boxed{x = -8} \quad \boxed{x = -6}$$

10) $p^2 = -2p$

$$p^2 + 2p = 0$$

$$p(p + 2) = 0$$

$$\boxed{p = 0} \quad \boxed{p = -2}$$

11) $8x^2 - 5x - 14 = 7x^2$

$$x^2 - 5x - 14 = 0$$

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

$$\boxed{x = 7} \quad \boxed{x = -2}$$

12) $a^2 + 14a = -24 + 4a$

$$a^2 + 10a + 24 = 0$$

$$(a + 6)(a + 4) = 0$$

$$\boxed{a = -6} \quad \boxed{a = -4}$$

13) $3x^2 + 11x - 4 = 0$

$$3x^2 + 12x - x - 4 = 0$$

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

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

$$\boxed{x = -4} \quad 3x - 1 = 0$$

$$3x = 1$$

$$\boxed{x = 1/3}$$

14) $25p^2 - 40p + 7 = 0$

$$25p^2 - 35p - 5p + 7$$

$$5p(5p - 7) - 1(5p - 7)$$

$$(5p - 7)(5p - 1)$$

$$5p - 7 = 0 \quad 5p - 1 = 0$$

$$5p = 7 \quad 5p = 1$$

$$\boxed{p = 7/5} \quad \boxed{p = 1/5}$$

15) $8r^2 - 33r - 43 = -8$

$$8r^2 - 33r - 35 = 0$$

$$8r^2 - 40r + 7r - 35 = 0$$

$$8r(r - 5) + 7(r - 5) = 0$$

$$(r - 5)(8r + 7) = 0$$

$$\boxed{r = 5} \quad \boxed{r = -7/8}$$

280	1
140	2
70	4
56	5
-40	+7
35	8
28	10
14	20

16) $3r^2 - 17r + 18 = -2$

$$3r^2 - 17r + 20 = 0$$

$$3r^2 - 12r - 5r + 20 = 0$$

$$3r(r - 4) - 5(r - 4) = 0$$

$$(r - 4)(3r - 5)$$

$$\boxed{r = 4} \quad \boxed{r = 5/3}$$

60	1
30	2
-20	+3
15	4
-12	-5

17) $7x^2 + 23x = 20$

$$7x^2 + 23x - 20 = 0$$

$$7x^2 + 28x - 5x - 20 = 0$$

$$7x(x + 4) - 5(x + 4) = 0$$

$$(x + 4)(7x - 5) = 0$$

$$\boxed{x = -4} \quad \boxed{x = 5/7}$$

140 1

18) $7n^2 + 2 = -9n$

$$7n^2 + 9n + 2 = 0$$

$$7n^2 + 7n + 2n + 2 = 0$$

$$7n(n + 1) + 2(n + 1) = 0$$

$$(n + 1)(7n + 2) = 0$$

$$\boxed{n = -1} \quad \boxed{n = -2/7}$$