Review: Factoring

1) $3b^2 - 27b$

GCF: $3b$

$\boxed{3b(b-9)}$

finished

2) $n^2 - 12n + 20$

$20 = -10 \cdot -2$

$-12 = -10 + -2$

$\boxed{(n-10)(n-2)}$

3) $x^2 + 16x + 63$

$63 = 7 \cdot 9$

$16 = 7 + 9$

$\boxed{(x+7)(x+9)}$

4) $m^2 - 16m + 60$

$60 = 10 \cdot 6$ or $-10 \cdot -6$

$-16 = -10 + -6$

$\boxed{(m-6)(m-10)}$

5) $6n^2 - 78n + 216$

Q: is 6 a common factor?

$6 \overline{)78}$ 13 $\quad$ $6 \overline{)216}$ 36

A: yes

$6(n^2 - 13n + 36)$

Q: anything else?

A: yes

$36 = 4 \cdot 9$ or $-4 \cdot -9$

$-13 = -4 + -9$

$\boxed{6(n-4)(n-9)}$

6) $p^2 - 4p - 32$

$-32 = -8 \cdot 4$

$-4 = -8 + 4$

$\boxed{(p+4)(p-8)}$

7) $n^2 + 5n - 14$

$-14 = 7 \cdot -2$

$5 = 7 + -2$

$\boxed{(n-2)(n+7)}$

8) $x^2 - 3x - 4$

$-4 = -4 \cdot 1$

$-3 = -4 + 1$

$(x+1)(x-4)$

9) $K^2 + 9k$

GCF: K

$K(K+9)$

finished

10) $5p^2 - 65p + 210$

GCF: 5 b/c all #s end in 5 or 0

$5\overline{)165}$ = 13 (5, 15)

$5\overline{)210}$ = 42 (20, 10)

$5(p^2 - 13p + 42)$

$42 = 6 \cdot 7$ or $-6 \cdot -7$

$-13 = -6 + -7$

$5(p-6)(p-7)$

11) $n^2 - 3n$

GCF: n

$n(n-3)$

12) $n^2 + 2n - 24$

$-24 = 6 \cdot -4$

$2 = 6 + -4$

$(n-4)(n+6)$

13) $x^2 + 3x - 70$

$-70 = 10 \cdot -7$

$3 = 10 + -7$

$(x-7)(x+10)$

14) $n^2 + 12n + 32$

$32 = 8 \cdot 4$

$12 = 8 + 4$

$(n+4)(n+8)$

15) $v^2 - 7v - 18$

$-18 = -9 \cdot 2$

$-7 = -9 + 2$

$(v+2)(v-9)$

16) $p^2 - 13p + 36$

$36 = 9 \cdot 4$ or $-9 \cdot -4$

$-13 = -9 + -4$

$(p-4)(p-9)$

17) $3k^2 + 6k - 240$

GCF: 3

$3(k^2 + 2k - 80)$

$-80 = 10 \cdot -8$

$2 = 10 + -8$

$\boxed{3(k-8)(k+10)}$

18) $p^2 + 15p + 54$

$54 = 9 \cdot 6$

~~$54 = 9$~~

$15 = 9 + 6$

$\boxed{(p+6)(p+9)}$

19) $k^2 - 6k$

GCF: k

$\boxed{k(k-6)}$

20) $x^2 + 2x - 3$

$-3 = 3 \cdot -1$

$2 = 3 + -1$

$\boxed{(x-1)(x+3)}$

21) $m(4m-5) = 0$

Set each factor $= 0$

$\boxed{m = 0}$ or $4m - 5 = 0$

$4m = 5$

$\boxed{m = \frac{5}{4}}$

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

$x + 3 = 0$ or $x - 4 = 0$

$\boxed{x = -3 \text{ or } x = 4}$

23) $(p-1)(5p+4) = 0$

$p - 1 = 0$ or $5p + 4 = 0$

$p = 1$ $\quad 5p = -4$

$\boxed{p = 1 \text{ or } p = -\frac{4}{5}}$

24) $(a-3)(a+3) = 0$

$a - 3 = 0$ $\quad a + 3 = 0$

$\boxed{a = 3 \text{ or } a = -3}$

25) $(x-2)(x+1)=0$

$x-2=0 \quad x+1=0$

$\boxed{x=2 \text{ or } x=-1}$

26) $k(5k-1)=0$

$k=0 \quad 5k-1=0$

$5k=1$

$\boxed{k=0 \text{ or } k=\frac{1}{5}}$

27) $p^2+9p+17=3$

a) first, get the right side $=0$

$p^2+9p+14=0$

b) factor as before

$14=7\cdot 2$

$9=7+2$

$(p+2)(p+7)=0$

c) set each factor $=0$

$p+2=0 \quad p+7=0$

$\boxed{p=-2 \text{ or } p=-7}$

28) $x^2-6x-21=6$

$x^2-6x-27=0$

$-27=-9\cdot 3$

$-6=-9+3$

$(x+3)(x-9)=0$

$x+3=0 \quad x-9=0$

$\boxed{x=-3 \text{ or } x=9}$

29) $a^2+13a+33=-9$

$a^2+13a+42=0$

$42=6\cdot 7$

$13=6+7$

$(a+6)(a+7)=0$

$a+6=0 \quad a+7=0$

$\boxed{a=-6 \text{ or } a=-7}$

30) $x^2+9x+12=-8$

$x^2+9x+20=0$

$20=4\cdot 5$

$9=4+5$

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

$x+4=0 \quad x+5=0$

$\boxed{x=-4 \text{ or } x=-5}$

31) $m^2 + 2m - 73 = 7$

$m^2 + 2m - 80 = 0$

$-80 = 10 \cdot -8$

$2 = 10 + -8$

$(m - 8)(m + 10) = 0$

$m - 8 = 0 \quad m + 10 = 0$

$\boxed{m = 8 \text{ or } m = -10}$

32) $v^2 - 8v + 10 = -6$

$v^2 - 8v + 16 = 0$

$16 = 4 \cdot 4$ or $-4 \cdot -4$

$-8 = -4 + -4$

$(v - 4)(v - 4) = 0$

$v - 4 = 0$

$\boxed{v = 4}$

2 = factors

1 answer

33) $x^2 - 7x - 3 = -9$

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

$6 = 6 \cdot 1$ or $-6 \cdot -1$

$-7 = -6 + -1$

$(x - 1)(x - 6) = 0$

$x - 1 = 0 \quad x - 6 = 0$

$\boxed{x = 1 \text{ or } x = 6}$

34) $n^2 - 4n - 2 = 3$

$n^2 - 4n - 5 = 0$

$-5 = -5 \cdot 1$

$4 = -5 + 1$

$(n + 1)(n - 5) = 0$

$n + 1 = 0 \quad n - 5 = 0$

$\boxed{n = -1 \text{ or } n = 5}$

35) $x^2 + 13x + 23 = -7$

$x^2 + 13x + 30 = 0$

$30 = 3 \cdot 10$

$13 = 3 + 10$

$(x + 3)(x + 10) = 0$

$x + 3 = 0 \quad x + 10 = 0$

$\boxed{x = -3 \text{ or } x = -10}$

36) $b^2 + 9b + 5 = 5$

$b^2 + 9b + 0 = 0$

$b^2 + 9b = 0$

$b(b + 9) = 0$

$b = 0 \quad b + 9 = 0$

$\boxed{b = 0 \text{ or } b = -9}$

37) $\lambda^2 + 14\lambda + 54 = 9$

$\lambda^2 + 14\lambda + 45 = 0$

$45 = 5 \cdot 9$

$14 = 5 + 9$

$(\lambda + 5)(\lambda + 9) = 0$

$\lambda + 5 = 0 \quad \lambda + 9 = 0$

$\boxed{\lambda = -5 \text{ or } \lambda = -9}$

38) $n^2 - 9n + 2 = 2$

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

$n^2 - 9n = 0$

$n(n - 9) = 0$

$n = 0 \quad n - 9 = 0$

$\boxed{n = 0 \text{ or } n = 9}$

39) $x^2 - 2x - 58 = -10$

$x^2 - 2x - 48 = 0$

$-48 = -8 \cdot 6$ or $8 \cdot -6$

$-2 = -8 + 6$

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

$x + 6 = 0 \quad x - 8 = 0$

$\boxed{x = -6 \text{ or } x = 8}$

40) $n^2 - n - 82 = 8$

$n^2 - n - 90 = 0$

$-90 = -10 \cdot 9$

$-1 = -10 + 9$

$(n + 9)(n - 10) = 0$

$n + 9 = 0 \quad n - 10 = 0$

$\boxed{n = -9 \text{ or } n = 10}$