

24A

1) $X + 2$

$$\begin{array}{r} X+2 \\ x \quad X+2 \\ \hline 2X+4 \\ X^2+2X \\ \hline X^2+4X+4 \end{array}$$

2) $X + 3$

$$\begin{array}{r} X+3 \\ x \quad X+3 \\ \hline 3X+9 \\ X^2+3X \\ \hline X^2+6X+9 \end{array}$$

3) $X + 5$

$$\begin{array}{r} X+5 \\ x \quad X+5 \\ \hline 5X+25 \\ X^2+5X \\ \hline X^2+10X+25 \end{array}$$

4) $X + 3 \overline{) X^2 + 5X + 6}$

$$\begin{array}{r} X+3 \\ x \quad X+3 \\ \hline 3X+9 \\ X^2+5X+6 \\ \hline X^2+5X+6 \\ \hline 0 \end{array}$$

Check

$$\begin{array}{r} X+2 \\ x \quad X+3 \\ \hline 3X+6 \\ X^2+2X \\ \hline X^2+5X+6 \end{array}$$

5) $X + 5 \overline{) X^2 + 11X + 36} \text{ R } 6$

$$\begin{array}{r} X+5 \\ x \quad X+5 \\ \hline 5X+25 \\ X^2+11X+36 \\ \hline X^2+10X+30 \\ \hline X+6 \end{array}$$

Continue to check by multiplying.

6) $X + 3 \overline{) X^2 + 7X + 12}$

$$\begin{array}{r} X+3 \\ x \quad X+3 \\ \hline 3X+9 \\ X^2+7X+12 \\ \hline X^2+6X+9 \\ \hline X+3 \end{array}$$

7)

$$\begin{array}{r} X+2 \\ x \quad X+8 \\ \hline 8X+16 \\ X^2+10X+16 \\ \hline X^2+8X \\ \hline 2X+16 \\ \hline 2X+16 \\ \hline 0 \end{array}$$

8)

$$\begin{array}{r} X+7 \\ x \quad X+3 \\ \hline 3X+21 \\ X^2+10X+21 \\ \hline X^2+3X \\ \hline 7X+21 \\ \hline 7X+21 \\ \hline 0 \end{array}$$

9)

$$\begin{array}{r} 2X+1 \\ x \quad X+3 \\ \hline 3X+6 \\ X^2+7X+3 \\ \hline X^2+6X \\ \hline X+3 \\ \hline X+3 \\ \hline 0 \end{array}$$

10)

$$\begin{array}{r} X^2+5X+7 \\ x \quad X+4 \\ \hline 4X+16 \\ X^3+9X^2+27X+28 \\ \hline X^3+4X^2 \\ \hline 5X^2+27X \\ \hline 5X^2+20X \\ \hline 7X+28 \\ \hline 7X+28 \\ \hline 0 \end{array}$$

11)

$$\begin{array}{r} X^2+3X+9 \\ x \quad X+1 \\ \hline X+3 \\ X^3+4X^2+12X+9 \\ \hline X^3+X^2 \\ \hline 3X^2+12X \\ \hline 3X^2+3X \\ \hline 9X+9 \\ \hline 9X+9 \\ \hline 0 \end{array}$$

24B

1) $X + 6$

$$\begin{array}{r} X+6 \\ x \quad X+6 \\ \hline 6X+36 \\ X^2+6X \\ \hline X^2+12X+36 \end{array}$$

2) $X + 7$

$$\begin{array}{r} X+7 \\ x \quad X+7 \\ \hline 7X+49 \\ X^2+7X \\ \hline X^2+14X+49 \end{array}$$

3) $2X + 1$

$$\begin{array}{r} 2X+1 \\ x \quad 2X+1 \\ \hline 2X+1 \\ 4X^2+2X \\ \hline 4X^2+4X+1 \end{array}$$

4)

$$\begin{array}{r} X+7 \\ x \quad X+3 \\ \hline 3X+21 \\ X^2+10X+21 \\ \hline X^2+3X \\ \hline 7X+21 \\ \hline 7X+21 \\ \hline 0 \end{array}$$

Check

$$\begin{array}{r} X+7 \\ x \quad X+3 \\ \hline 3X+21 \\ X^2+7X \\ \hline X^2+10X+21 \end{array}$$

5)

$$\begin{array}{r} X+5 \\ x \quad X+2 \\ \hline 2X+10 \\ X^2+7X+10 \\ \hline X^2+2X \\ \hline 5X+10 \\ \hline 5X+10 \\ \hline 0 \end{array}$$

Continue to check by multiplying.

6)

$$\begin{array}{r} X+6 \\ x \quad X+1 \\ \hline X+6 \\ X^2+7X+6 \\ \hline X^2+X \\ \hline 6X+6 \\ \hline 6X+6 \\ \hline 0 \end{array}$$

7)

$$\begin{array}{r} X+5 \\ x \quad X+3 \\ \hline 3X+15 \\ X^2+8X+15 \\ \hline X^2+3X \\ \hline 5X+15 \\ \hline 5X+15 \\ \hline 0 \end{array}$$

8)

$$\begin{array}{r} X+5 \\ x \quad X+4 \\ \hline 4X+20 \\ X^2+9X+20 \\ \hline X^2+4X \\ \hline 5X+20 \\ \hline 5X+20 \\ \hline 0 \end{array}$$

9)

$$\begin{array}{r} X+3 \\ x \quad X-2 \\ \hline -2X-6 \\ X^2+X-6 \\ \hline X^2-2X \\ \hline 3X-6 \\ \hline 3X-6 \\ \hline 0 \end{array}$$

10)

$$\begin{array}{r} X^2-3X+5 \\ x \quad X-2 \\ \hline -2X-4 \\ X^3-5X^2+11X-10 \\ \hline X^3-2X^2 \\ \hline -3X^2+11X \\ \hline -3X^2+6X \\ \hline 5X-10 \\ \hline 5X-10 \\ \hline 0 \end{array}$$

11)

$$\begin{array}{r} X^2+4X-7 \text{ R } 5 \\ x \quad X-3 \\ \hline -3X+9 \\ X^3+X^2-19X+26 \\ \hline X^3-3X^2 \\ \hline 4X^2-19X \\ \hline 4X^2-12X \\ \hline -7X+26 \\ \hline -7X+21 \\ \hline 5 \end{array}$$

24C

$$1) \begin{array}{r} 4X + 6 \text{ R } -5 \\ X + 1 \overline{) 4X^2 + 10X + 1} \\ \underline{-(4X^2 + 4X)} \\ 6X + 1 \\ \underline{-(6X + 6)} \\ -5 \end{array}$$

$$2) \begin{array}{r} 4X + 6 \\ x \quad X + 1 \\ \hline 4X + 6 \\ 4X^2 + 6X \\ \hline 4X^2 + 10X + 6 \\ \hline -5 \\ 4X^2 + 10X + 1 \end{array}$$

$$3) \begin{array}{r} 2X + 2 \text{ R } 3 \\ 2X + 1 \overline{) 4X^2 + 6X + 5} \\ \underline{-(4X^2 + 2X)} \\ 4X + 5 \\ \underline{-(4X + 2)} \\ 3 \end{array}$$

$$4) \begin{array}{r} 2X + 2 \\ x \quad 2X + 1 \\ \hline 2X + 2 \\ 4X^2 + 4X \\ \hline 4X^2 + 6X + 2 \\ \hline + 3 \\ 4X^2 + 6X + 5 \end{array}$$

$$5) \begin{array}{r} X + 5 \\ X + 4 \overline{) X^2 + 9X + 20} \\ \underline{-(X^2 + 4X)} \\ 5X + 20 \\ \underline{-(5X + 20)} \\ 0 \end{array}$$

$$6) \begin{array}{r} X + 4 \\ x \quad X + 5 \\ \hline 5X + 20 \\ X^2 + 4X \\ \hline X^2 + 9X + 20 \end{array}$$

7) $X + 1$

$$8) \begin{array}{r} X + 1 \\ x \quad X + 1 \\ \hline X + 1 \\ X^2 + X \\ \hline X^2 + 2X + 1 \end{array}$$

9) $X^{12}Y^{12}Y^2 = X^{12}Y^{14}$

10) $A^{5+3} = A^8$

11) $X^{5-2-(-4)} = X^7$

$$12) \frac{2X}{Y} - \frac{3X}{Y^2} + \frac{4}{XY} =$$

$$\frac{2X}{Y} - \frac{3X}{Y} + \frac{4}{XY} = \frac{-X}{Y} + \frac{4}{XY} \text{ or }$$

$$\frac{4 - X^2}{XY} \quad (\text{Using common denominator to add})$$

13) .04914

14) 3600

15) 63

16) $|-3| = 3$

17) $7X^2 + 2X + 1$

18) $2X^2 - 17$

19) 1, 97

20) addition, multiplication

24D

$$1) \begin{array}{r} 2X - 3 \text{ R } 13 \\ X + 1 \overline{) 2X^2 - X + 10} \\ \underline{-(2X^2 + 2X)} \\ -3X + 10 \\ \underline{-(-3X - 3)} \\ 13 \end{array}$$

$$2) \begin{array}{r} 2X - 3 \\ x \quad X + 1 \\ \hline 2X - 3 \\ 2X^2 - 3X \\ \hline 2X^2 - X - 3 \\ \hline + 13 \\ 2X^2 - X + 10 \end{array}$$

$$3) \begin{array}{r} 3X + 2 \\ X + 3 \overline{) 3X^2 + 11X + 6} \\ \underline{-(3X^2 + 9X)} \\ 2X + 6 \\ \underline{-(2X + 6)} \\ 0 \end{array}$$

$$4) \begin{array}{r} 3X + 2 \\ x \quad X + 3 \\ \hline 9X + 6 \\ 3X^2 + 2X \\ \hline 3X^2 + 11X + 6 \end{array}$$

$$5) \begin{array}{r} 3X - 2 \text{ R } -1 \\ X + 4 \overline{) 3X^2 + 10X - 9} \\ \underline{-(3X^2 + 12X)} \\ -2X - 9 \\ \underline{-(-2X - 8)} \\ -1 \end{array}$$

$$6) \begin{array}{r} 3X - 2 \\ x \quad X + 4 \\ \hline 12X - 8 \\ 3X^2 - 2X \\ \hline 3X^2 + 10X - 8 \\ \hline -1 \\ 3X^2 + 10X - 9 \end{array}$$

7) $X + 4$

$$8) \begin{array}{r} X + 4 \\ x \quad X + 4 \\ \hline 4X + 16 \\ X^2 + 4X \\ \hline X^2 + 8X + 16 \end{array}$$

9) $A^{(5)(-2)}B^{(7)(-2)}B^{(3)(-2)}A^4 =$
 $A^{-10}B^{-14}B^{-6}A^4 = A^{-6}B^{-20}$

10) $B^4A^{-1}B^2 = A^{-1}B^6$

11) .879

12) 50

13) -16

14) $|-3| = 3$

15) $5X^2 + 7X + 5$

16) $2X^2 + 3X - 1$

17) $2 \times 2 \times 2 \times 3 \times 3 \times 3$

18) addition and multiplication

19) $24 \div 6 = 4$ hours

20) $24 \div 3 = 8$ hours

24E

$$\begin{array}{r}
 1) \quad \begin{array}{r} X+4 \\ 2X+2 \overline{) 2X^2 + 10X + 8} \\ \underline{-(2X^2 + 2X)} \\ 8X + 8 \\ \underline{-(8X + 8)} \\ 0 \end{array}
 \end{array}$$

$$\begin{array}{r}
 2) \quad \begin{array}{r} 2X+2 \\ x \quad X+4 \\ \hline 8X+8 \\ 2X^2+2X \\ \hline 2X^2+10X+8 \end{array}
 \end{array}$$

$$\begin{array}{r}
 3) \quad \begin{array}{r} 3X-2 \\ X+4 \overline{) 3X^2 + 10X - 8} \\ \underline{-(3X^2 + 12X)} \\ -2X - 8 \\ \underline{-(-2X - 8)} \\ 0 \end{array}
 \end{array}$$

$$\begin{array}{r}
 4) \quad \begin{array}{r} 3X-2 \\ x \quad X+4 \\ \hline 12X-8 \\ 3X^2-2X \\ \hline 3X^2+10X-8 \end{array}
 \end{array}$$

$$\begin{array}{r}
 5) \quad \begin{array}{r} 2X+4 \text{ R } 3 \\ 2X-5 \overline{) 4X^2 - 2X - 17} \\ \underline{-(4X^2 - 10X)} \\ 8X - 17 \\ \underline{-(8X - 20)} \\ 3 \end{array}
 \end{array}$$

$$\begin{array}{r}
 6) \quad \begin{array}{r} 2X-5 \\ x \quad 2X+4 \\ \hline 8X-20 \\ 4X^2-10X \\ \hline 4X^2-2X-20 \\ + 3 \\ \hline 4X^2-2X-17 \end{array}
 \end{array}$$

7) $X+3$

$$\begin{array}{r}
 8) \quad \begin{array}{r} X+3 \\ x \quad X+3 \\ \hline 3X+9 \\ X^2+3X \\ \hline X^2+6X+9 \end{array}
 \end{array}$$

9) $(2^2)^3 = 2^6$

10) $X^4 \cdot 3Y^{-2} \cdot 3X^{-3}Y^{-5}X^1 = X^{10}Y^{-11}$

11) $(10)^4 = (10^1)^4$

12) $3A^3B^3 + 6A^4B^3 - 7A^3B^3 = 6A^4B^3 - 4A^3B^3$

13) 1.725

14) 7,000

15) $3X^2 + 5X - 16$

16) $X^2 + 6X + 4$

17) $2 \times 2 \times 3 \times 11$

18) $2X$

19) $18 \div 9 = 2 \text{ hours}$

20) $18 \div 3 = 6 \text{ hours}$

25A

$$\begin{array}{r}
 1) \quad (X-2)(X+2) \\ \begin{array}{r} X+2 \\ x \quad X-2 \\ \hline -2X-4 \\ X^2+2X \\ \hline X^2-4 \end{array}
 \end{array}$$

$$\begin{array}{r}
 2) \quad (X-4)(X+4) \\ \begin{array}{r} X+4 \\ x \quad X-4 \\ \hline -4X-16 \\ X^2+4X \\ \hline X^2-16 \end{array}
 \end{array}$$

3) $(X-5)(X+5)$ Continue to check by multiplying.

4) $(Y-12)(Y+12)$

5) $(X-10)(X+10)$

6) $(X-9)(X+9)$

7) $(X-7)(X+7)$

8) $(X-8)(X+8)$

9) $(A-11)(A+11)$

10) $(X-Y)(X+Y)$

11) $(B-2)(B+2)$

12) $(X-3)(X+3)$

$$\begin{array}{r}
 13) \quad \begin{array}{r} 65 \\ \hline 65 \\ 4225 \end{array}
 \end{array}$$

$$\begin{array}{r}
 14) \quad \begin{array}{r} 35 \\ \hline 35 \\ 1225 \end{array}
 \end{array}$$

$$\begin{array}{r}
 15) \quad \begin{array}{r} 48 \\ \hline 42 \\ 2016 \end{array}
 \end{array}$$

$$\begin{array}{r}
 16) \quad \begin{array}{r} 85 \\ \hline 85 \\ 7225 \end{array}
 \end{array}$$

25B

$$\begin{array}{r}
 1) \quad (X-1)(X+1) \\ \begin{array}{r} X+1 \\ x \quad X-1 \\ \hline -X-1 \\ X^2+X \\ \hline X^2-1 \end{array}
 \end{array}$$

$$\begin{array}{r}
 2) \quad (X-6)(X+6) \\ \begin{array}{r} X+6 \\ x \quad X-6 \\ \hline -6X-36 \\ X^2+6X \\ \hline X^2-36 \end{array}
 \end{array}$$

3) $(Y-4)(Y+4)$ Continue to check by multiplying.

4) $(A-B)(A+B)$

5) $(A-7)(A+7)$

6) $(B-5)(B+5)$

7) $(Y-X)(Y+X)$

8) $(X-2)(X+2)$

9) $(A-12)(A+12)$

10) $4(X^2 - Y^2) = 4(X-Y)(X+Y)$

11) $(B-8)(B+8)$

12) $(X-9)(X+9)$

$$\begin{array}{r}
 13) \quad \begin{array}{r} 57 \\ \hline 53 \\ 3021 \end{array}
 \end{array}$$

$$\begin{array}{r}
 14) \quad \begin{array}{r} 75 \\ \hline 75 \\ 5625 \end{array}
 \end{array}$$

$$\begin{array}{r}
 15) \quad \begin{array}{r} 35 \\ \hline 35 \\ 1225 \end{array}
 \end{array}$$

$$\begin{array}{r}
 16) \quad \begin{array}{r} 96 \\ \hline 94 \\ 9024 \end{array}
 \end{array}$$

Dividing Polynomials

Date_____ Period____

Divide.

1) $(m^2 - 7m - 11) \div (m - 8)$

$$m + 1 - \frac{3}{m - 8}$$

2) $(n^2 - n - 29) \div (n - 6)$

$$n + 5 + \frac{1}{n - 6}$$

3) $(n^2 + 10n + 18) \div (n + 5)$

$$n + 5 - \frac{7}{n + 5}$$

4) $(k^2 - 7k + 10) \div (k - 1)$

$$k - 6 + \frac{4}{k - 1}$$

5) $(n^2 - 3n - 21) \div (n - 7)$

$$n + 4 + \frac{7}{n - 7}$$

6) $(a^2 - 28) \div (a - 5)$

$$a + 5 - \frac{3}{a - 5}$$

7) $(r^2 + 14r + 38) \div (r + 8)$

$$r + 6 - \frac{10}{r + 8}$$

8) $(x^2 + 5x + 3) \div (x + 6)$

$$x - 1 + \frac{9}{x + 6}$$

9) $(2x^2 - 17x - 38) \div (2x + 3)$

$$x - 10 - \frac{8}{2x + 3}$$

10) $(42x^2 - 33) \div (7x + 7)$

$$6x - 6 + \frac{9}{7x + 7}$$

$$11) (x^2 - 74) \div (x - 8)$$

$$x + 8 - \frac{10}{x - 8}$$

$$12) (2p^2 + 7p - 39) \div (2p - 7)$$

$$p + 7 + \frac{10}{2p - 7}$$

$$13) (n^3 + 7n^2 + 14n + 3) \div (n + 2)$$

$$n^2 + 5n + 4 - \frac{5}{n + 2}$$

$$14) (p^3 - 10p^2 + 20p + 26) \div (p - 5)$$

$$p^2 - 5p - 5 + \frac{1}{p - 5}$$

$$15) (v^3 - 2v^2 - 14v - 5) \div (v + 3)$$

$$v^2 - 5v + 1 - \frac{8}{v + 3}$$

$$16) (x^3 - 13x^2 + 40x + 18) \div (x - 7)$$

$$x^2 - 6x - 2 + \frac{4}{x - 7}$$

$$17) (k^3 - 30k - 18 - 4k^2) \div (3 + k)$$

$$k^2 - 7k - 9 + \frac{9}{3 + k}$$

$$18) (-5k^2 + k^3 + 8k + 4) \div (-1 + k)$$

$$k^2 - 4k + 4 + \frac{8}{-1 + k}$$

$$19) (x^3 + 5x^2 - 32x - 7) \div (x - 4)$$

$$x^2 + 9x + 4 + \frac{9}{x - 4}$$

$$20) (50k^3 + 10k^2 - 35k - 7) \div (5k - 4)$$

$$10k^2 + 10k + 1 - \frac{3}{5k - 4}$$