

Name _____

Period _____

Date _____

7.6

Factoring $ax^2 + bx + c$

1) $2w^2 + \underline{13}w + 15$ 1.15
 2.1 $\boxed{(2w+3)(1w+5)}$ 3.5
 $\begin{array}{r} 3 \\ 10 \\ \hline 13 \end{array}$

2) $3d^2 + \underline{20}d + 12$ 1.12
 2.1 $\boxed{\cancel{(3d+2)}(1d+6)}$ 2.6
 $\begin{array}{r} 18 \\ 20 \\ \hline \end{array}$

3) $3p^2 - \underline{7}p - 40$ 1.40
 3.1 $\boxed{(3p+8)(1p-5)}$ 2.20
 $\begin{array}{r} -150 \\ 8p \\ \hline -7p \end{array}$
 4.10
 5.8

4) $4n^2 + \underline{62}n - 32$ 1.16
 2 $(2n^2 + 31n - 16)$ 2.8
 $\begin{array}{r} 64 \\ -16 \\ \hline 48 \end{array}$

2.1 $\boxed{(2n+1)(n+16)}$ 4.4
 $\begin{array}{r} +32 \\ -1 \\ \hline +31 \end{array}$

5) $6x^2 - 10x - 24$ 1.14
 2 $\boxed{(3x^2 - 5x - 12)}$ 2.7
 3.1 $\boxed{(3x+4)(1x-3)}$ 3.4
 $\begin{array}{r} -9 \\ 6 \\ \hline -5 \end{array}$

5.1 $\boxed{(5x-7)(1x-2)}$ 1.14
 $\begin{array}{r} -10 \\ -17 \\ \hline \end{array}$

$$7) \quad 14x^2 - 67x + 163$$

$$\begin{array}{r} 1 \cdot 14 \\ 2 \cdot 7 \\ \hline (2x - 7)(7x - 9) \end{array} \quad \begin{array}{r} 1 \cdot 63 \\ 9 \cdot 7 \\ \hline -67 \end{array}$$

$\frac{-4 \uparrow}{-18}$

$$8) \quad 2m^2 - m - 15$$

$$\begin{array}{r} 1 \cdot 15 \\ 3 \cdot 5 \\ \hline (2m + 5)(m - 3) \end{array} \quad \begin{array}{r} 5 \cdot m \\ -6 \cdot m \\ \hline -1 \cdot m \end{array} \quad \checkmark$$

$$9) \quad 3x^2 + 9x - 84$$

$$\begin{array}{r} 1 \cdot 84 \\ 2 \cdot 42 \\ 4 \cdot 21 \\ 6 \cdot 14 \\ 7 \cdot 12 \\ \hline (3x + 12)(x + 7) \end{array}$$

$$\begin{array}{r} -12x \\ +21x \\ \hline +9x \end{array}$$

$$10) \quad 4y^2 + 26y + 30$$

$$2(2y^2 + 13y + 15)$$

2.1

1.15

3.5

$$\overbrace{(2(2y+3)(1y+5)}^{3+10}$$

$\frac{+10}{13}$

$$11) \quad 5t^2 - 24t - 5$$

5.1

5.1

$$\overbrace{(5t+1)(1t-5)}^{-25}$$

$\frac{-25}{-24}$

$$12) \quad 7c^2 - 2c - 9$$

7.1

1.9

3.3

$$\overbrace{(7c+9)(1c-1)}^{-\frac{9}{2}}$$

$$13) \quad 8x^2 - 42x + 27$$

$$\begin{array}{r} 8 \cdot 1 \\ 2 \cdot 4 \end{array} \overbrace{(4x-3)(2x-9)}^{1 \cdot 27 \\ 3 \cdot 9} \begin{array}{r} -6 \\ -36 \\ \hline -42 \end{array}$$

$$14) \quad 6x^2 - 2x - 20$$

$$\begin{array}{r} 2 \\ 3 \cdot 1 \end{array} \boxed{2(3x+5)(1x-2)} \begin{array}{r} 1 \cdot 10 \\ 2 \cdot 5 \end{array} \begin{array}{r} 5 \\ -6 \\ \hline -1 \end{array}$$

$$15) \quad 2c^2 - 23c + 11$$

$$\begin{array}{r} 2 \cdot 1 \end{array} \boxed{(2c+1)(1c-11)} \begin{array}{r} 1 \cdot 11 \end{array} \begin{array}{r} 1 \\ -22 \\ \hline -23 \end{array}$$

16) The area of a rectangular computer is $4x^2 + 20x + 16$. The width of the screen is $(2x+8)(2x+2)$. What's the length of the computer?

$$(2x+2)$$

17) The area of a rectangular granite counter top is $12x^2 + 10x - 12$. The width of the counter top is

$$\begin{array}{r} (2x+3)(6x-4) \\ \hline = 8 \\ \hline 10 \end{array}$$

What is the length of the counter top?

$$(6x-4)$$

18) The area of a rectangular cover is $4x^2 - 6x - 40$. The width of the cover is $(2x-8)$. What is the length of the cover?

$$\underline{(2x+5)}$$

$$(2x+5)$$

19) The area of a rectangular parking lot is $21x^2 - 44x + 15$. The width of the parking lot is $(3x-5)(7x-3)$. What is the length of the parking lot?

$$(7x-3)$$

$$20) \quad 6x^2 - 10x - 4$$

$$\begin{array}{r} 2 \\ (3x^2 - 5x - 2) \\ \hline 3.1 \end{array} \quad \begin{array}{l} 1.2 \\ \text{---} \\ 2(3x+1)(1x-2) \\ \hline -6 \\ \hline -5 \end{array}$$

$$21) \quad 6d^2 + 21d + 15$$

$$3 \quad (2d^2 + 7d + 5)$$

$$\begin{array}{r} 2.1 \\ (3(2d+5)(1d+1)) \quad 5.1 \\ \hline \frac{2}{5} \\ \hline 7 \end{array}$$

$$22) \quad 8n^2 + 68n + 84$$

$$4 \quad (2n^2 + (17n + 21))$$

$$\begin{array}{r} 2.1 \\ [4(2n+3)(1n+7)] \quad 1.2/ \\ \hline \frac{4}{17} \\ \hline 17 \end{array}$$