**19.** $Q + N = 30$

$.25Q + .05N = 4.30$

$(.25Q + .05N = 4.30)(100) \Rightarrow 25Q + 5N = 430$

$(Q + N = 30)(-5) \Rightarrow -5Q - 5N = -150$

$20Q = 280$

$Q = 14$

$Q + N = 30 \Rightarrow (14) + N = 30$

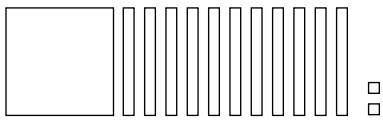
$N = 16$

**20.** $Y = -2X + 9$

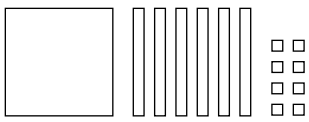
$2X + Y = 9$

## Lesson Practice 20A

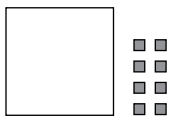
**1.** $X^2 + 11X + 2$



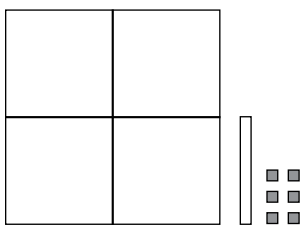
**2.** $X^2 + 6X + 8$



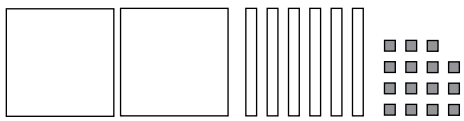
**3.** $X^2 - 8$



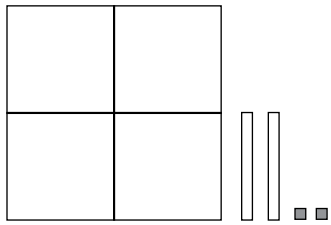
**4.**
$$\begin{array}{r} X^2 - 6X + 3 \\ 3X^2 + 7X - 9 \\ \hline 4X^2 + X - 6 \end{array}$$



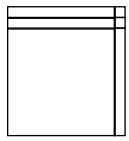
**5.**
$$\begin{array}{r} X^2 \quad - 8 \\ X^2 + 6X - 7 \\ \hline 2X^2 + 6X - 15 \end{array}$$



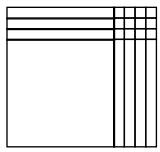
**6.**
$$\begin{array}{r} 2X^2 + 10X + 7 \\ 2X^2 - 8X - 9 \\ \hline 4X^2 + 2X - 2 \end{array}$$



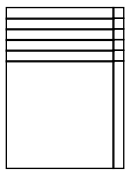
**7.** $(X + 1)(X + 2) = X^2 + 3X + 2$



**8.** $(X + 4)(X + 3) = X^2 + 7X + 12$



**9.** $(X + 1)(X + 5) = X^2 + 6X + 5$



**10.**
$$\begin{array}{r} 3X + 2 \\ \times X + 1 \\ \hline 3X + 2 \\ 3X^2 + 2X \\ \hline 3X^2 + 5X + 2 \end{array}$$

**11.**
$$\begin{array}{r} 5X + 5 \\ \times X + 2 \\ \hline 10X + 10 \\ 5X^2 + 5X \\ \hline 5X^2 + 15X + 10 \end{array}$$

**12.**
$$\begin{array}{r} 2X + 1 \\ \times X + 5 \\ \hline 10X + 5 \\ 2X^2 + X \\ \hline 2X^2 + 11X + 5 \end{array}$$

**13.**
$$\begin{array}{r} X + 8 \\ \times 3X + 5 \\ \hline 5X + 40 \\ 3X^2 + 24X \\ \hline 3X^2 + 29X + 40 \end{array}$$

**14.**
$$\begin{array}{r} X+3 \\ \times\ 2X+1 \\ \hline X+3 \\ 2X^2+6X \\ \hline 2X^2+7X+3 \end{array}$$

**15.**
$$\begin{array}{r} 3X+2 \\ \times\ 2X+1 \\ \hline 3X+2 \\ 6X^2+4X \\ \hline 6X^2+7X+2 \end{array}$$

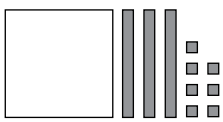
**16.**
$$\begin{array}{r} 4X+2 \\ \times\ X+3 \\ \hline 12X+6 \\ 4X^2+2X \\ \hline 4X^2+14X+6 \end{array}$$

**17.**
$$\begin{array}{r} 2X-5 \\ \times\ X+2 \\ \hline 4X-10 \\ 2X^2-5X \\ \hline 2X^2-X-10 \end{array}$$

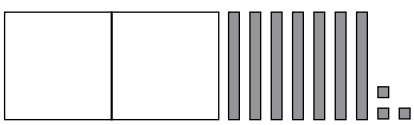
**18.**
$$\begin{array}{r} 3X+5 \\ \times\ 3X-1 \\ \hline -3X-5 \\ 9X^2-15X \\ \hline 9X^2+12X-5 \end{array}$$

## Lesson Practice 20B

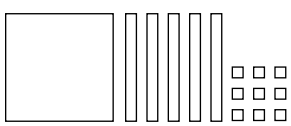
**1.** $X^2-3X-7$



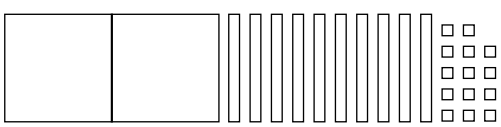
**2.** $2X^2-7X-3$



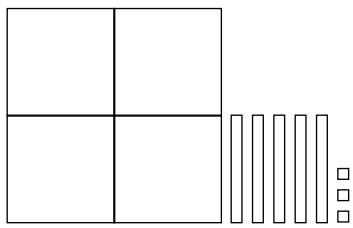
**3.** $X^2+5X+9$



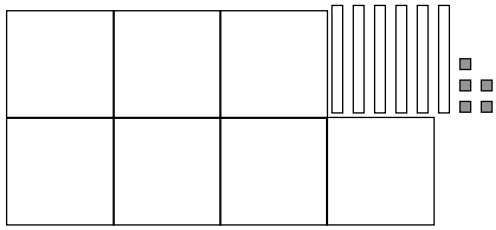
**4.**
$$\begin{array}{r} X^2+3X+2 \\ X^2+7X+12 \\ \hline 2X^2+10X+14 \end{array}$$



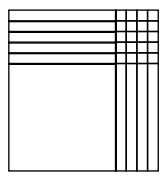
**5.**
$$\begin{array}{r} X^2+6X+5 \\ 3X^2-X-2 \\ \hline 4X^2+5X+3 \end{array}$$



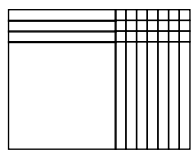
**6.**
$$\begin{array}{r} 5X^2-5X-10 \\ 2X^2+11X+5 \\ \hline 7X^2+6X-5 \end{array}$$



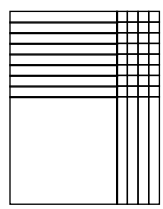
**7.** $(X+4)(X+5)=X^2+9X+20$



**8.** $(X+7)(X+3)=X^2+10X+21$



**9.** $(X+4)(X+8)=X^2+12X+32$



**10.**
$$\begin{array}{r} 7X+1 \\ \times\ X+2 \\ \hline 14X+2 \\ 7X^2+X \\ \hline 7X^2+15X+2 \end{array}$$

**11.**
$$\begin{array}{r} 3X+7 \\ \times\ X+6 \\ \hline 18X+42 \\ 3X^2+7X \\ \hline 3X^2+25X+42 \end{array}$$

**12.**
$$\begin{array}{r} 2X+8 \\ \times\ 3X+1 \\ \hline 2X+8 \\ 6X^2+24X \\ \hline 6X^2+26X+8 \end{array}$$

**13.**
$$\begin{array}{r} X+8 \\ \times\ X-3 \\ \hline -3X-24 \\ X^2+8X \\ \hline X^2+5X-24 \end{array}$$

**14.**
$$\begin{array}{r} 2X-1 \\ \times\ X+9 \\ \hline 18X-9 \\ 2X^2+X \\ \hline 2X^2+17X-9 \end{array}$$

**15.**
$$\begin{array}{r} 3X+5 \\ \times\ X+2 \\ \hline 6X+10 \\ 3X^2+5X \\ \hline 3X^2+11X+10 \end{array}$$

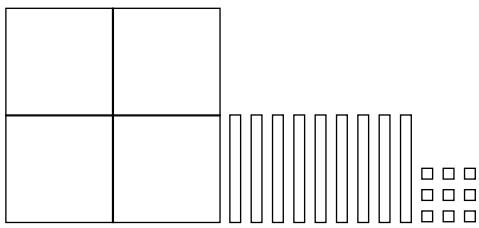
**16.**
$$\begin{array}{r} 4X-2 \\ \times\ X-3 \\ \hline -12X+6 \\ 4X^2-2X \\ \hline 4X^2-14X+6 \end{array}$$

**17.**
$$\begin{array}{r} 5X+2 \\ \times\ 3X-3 \\ \hline -15X-6 \\ 15X^2-6X \\ \hline 15X^2-9X-6 \end{array}$$

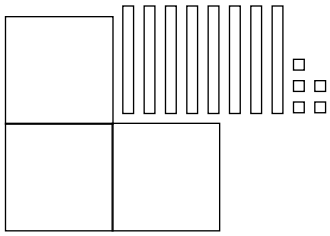
**18.**
$$\begin{array}{r} 3X+7 \\ \times\ 4X+2 \\ \hline 6X+14 \\ 12X^2+28X \\ \hline 12X^2+34X+14 \end{array}$$

## Systematic Review 20C

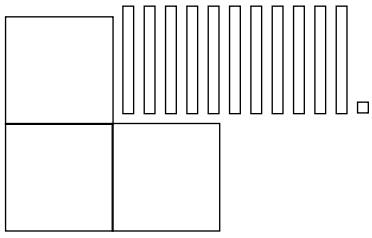
**1.**
$$\begin{array}{r} 3X^2+7X+6 \\ X^2+2X+3 \\ \hline 4X^2+9X+9 \end{array}$$



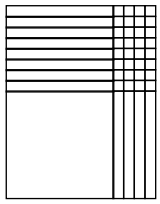
**2.**
$$\begin{array}{r} 2X^2+5X+1 \\ X^2+3X+4 \\ \hline 3X^2+8X+5 \end{array}$$



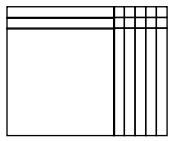
**3.**
$$\begin{array}{r} 4X^2+8X+2 \\ -X^2+3X-1 \\ \hline 3X^2+11X+1 \end{array}$$



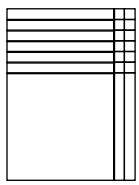
**4.** $(X+4)(X+8)=X^2+12X+32$



**5.** $(X+5)(X+2)=X^2+7X+10$



**6.** $(X+2)(X+6)=X^2+8X+12$



**7.**
$$\begin{array}{r} 3X+6 \\ \times\ X+2 \\ \hline 6X+12 \\ 3X^2+6X \\ \hline 3X^2+12X+12 \end{array}$$

**8.**
$$\begin{array}{r} 2X+5 \\ \times\ X+3 \\ \hline 6X+15 \\ 2X^2+\ 5X \\ \hline 2X^2+11X+15 \end{array}$$

**9.**
$$\begin{array}{r} 4X-5 \\ \times\ X+1 \\ \hline 4X-5 \\ 4X^2-5X \\ \hline 4X^2-\ X-5 \end{array}$$

**10.** $\dfrac{1}{X^{-4}} = X^4$

**11.** $X^{-3} = \dfrac{1}{X^3}$

**12.** $5^2 \times 3^0 \times 5^{-4} = 5^{2+(-4)} \times 1 = 5^{-2}$

**13.** $A^4 \div A^7 = A^{4-7} = A^{-3}$

**14.** $\left(5^2\right)^5 = 5^{2\times5} = 5^{10}$

**15.** $(5)^{12} = (5)^{3\times4} = \left(5^3\right)^4$

**16.** $\sqrt{196} = 14$

**17.** $C^{-5} \times C^2 = C^{-5+2} = C^{-3}$

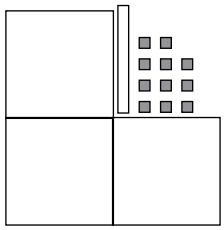
**18.**
$$\begin{array}{r} X+4 \\ \times\ X+5 \\ \hline 5X+20 \\ X^2+4X \\ \hline X^2+9X+20 \end{array}$$

**19.** $A = X^2+9X+20 = (6)^2+9(6)+20$
$= 36+54+20 = 110$ square units

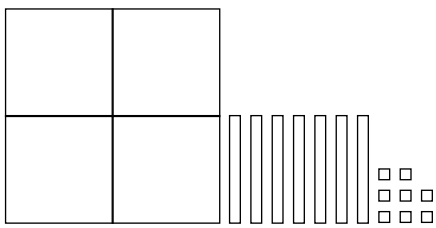
**20.** $(X+4)(2) \Rightarrow$ $\quad 2X\ +8$
$(X+5)(2) \Rightarrow$ $\quad \times\ 2X+10$
$\quad 20X+80$
$\quad 4X^2+16X$
$\quad 4X^2+36X+80$

## Systematic Review 20D

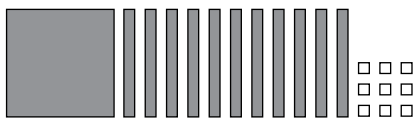
**1.**
$$\begin{array}{r} X^2-3X-7 \\ 2X^2+4X-4 \\ \hline 3X^2+\ X-11 \end{array}$$



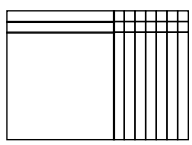
**2.**
$$\begin{array}{r} X^2+11X+2 \\ 3X^2-\ 4X+6 \\ \hline 4X^2+\ 7X+8 \end{array}$$



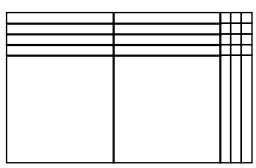
**3.**
$$\begin{array}{r} X^2-10X-\ 5 \\ -2X^2-\ \ X+14 \\ \hline -X^2-11X+\ 9 \end{array}$$



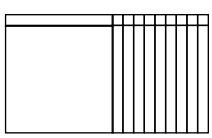
**4.** $(X+2)(X+7) = X^2+9X+14$



**5.** $(2X+3)(X+4) = 2X^2+11X+12$



**6.** $(X+1)(X+9) = X^2+10X+9$



**7.**
$$\begin{array}{r} 2X+4 \\ \times\ X+3 \\ \hline 6X+12 \\ 2X^2+\ 4X \\ \hline 2X^2+10X+12 \end{array}$$

**8.**
$$\begin{array}{r} 3X-1 \\ \times\ X+4 \\ \hline 12X-4 \\ 3X^2-\ X \\ \hline 3X^2+11X-4 \end{array}$$

**9.**
$$\begin{array}{r} 2X-3 \\ \times\ X-4 \\ \hline -8X+12 \\ 2X^2-\ 3X \\ \hline 2X^2-11X+12 \end{array}$$

**10.** $\dfrac{1}{X^4} = X^{-4}$

**11.** $\dfrac{1}{Y^{-5}} = Y^5$

**12.** $3^7 \times 4^3 \times 4^{-2} = 3^7 4^{3+(-2)} = 3^7 4^1$ or $3^7 \times 4$

**13.** $B^5 \div B^1 = B^{5-1} = B^4$

**14.** $\left(8^3\right)^6 = 8^{3\times 6} = 8^{18}$

**15.** $(2)^{15} = (2)^{3\times 5} = \left(2^3\right)^5$

**16.** $\sqrt{225} = 15$

**17.** $D^{-3} \times D^8 \times D^{-7} = D^{-3+8+(-7)} = D^{-2}$

**18.**
$$\begin{array}{r} 2X+4 \\ \times\ X+4 \\ \hline 8X+16 \\ 2X^2+\ 4X \\ \hline 2X^2+12X+16 \end{array}$$

**19.** $A = 2X^2+12X+16 =$

$2(10)^2+12(10)+16 =$

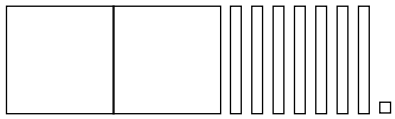
$2(100)+120+16 =$

$200+120+16 = 336$ square units

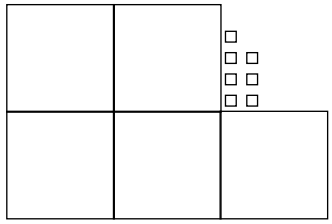
**20.**
$$\begin{array}{r} 2X^2+12X+16 \\ X^2+\ 3X+\ 1 \\ \hline 3X^2+15X+17 \end{array}$$

## Systematic Review 20E

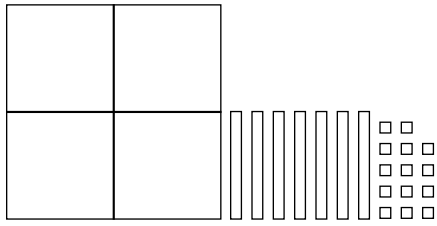
**1.**
$$\begin{array}{r} X^2+3X-2 \\ X^2+4X+3 \\ \hline 2X^2+7X+1 \end{array}$$



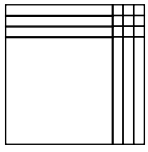
**2.**
$$\begin{array}{r} 3X^2+2X-1 \\ 2X^2-2X+8 \\ \hline 5X^2\quad\ +7 \end{array}$$



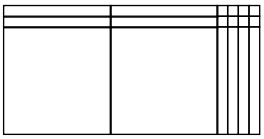
**3.**
$$\begin{array}{r} 5X^2+4X+\ 7 \\ -X^2+3X+\ 7 \\ \hline 4X^2+7X+14 \end{array}$$



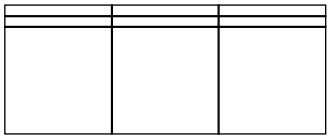
**4.** $(X+3)(X+3) = X^2+6X+9$



**5.** $(2X+4)(X+2) = 2X^2+8X+8$



**6.** $(3X)(X+2) = 3X^2+6X$



**7.**
$$\begin{array}{r} 2X-3 \\ \times\ X-2 \\ \hline -4X+6 \\ 2X^2-3X \\ \hline 2X^2-7X+6 \end{array}$$

**8.**
$$\begin{array}{r} X-1 \\ \times\ X-6 \\ \hline -6X+6 \\ X^2-\ X \\ \hline X^2-7X+6 \end{array}$$

**9.**
$$\begin{array}{r} 2X+2 \\ \times\ X-3 \\ \hline -6X-6 \\ 2X^2+2X \\ \hline 2X^2-4X-6 \end{array}$$

**10.** $\dfrac{1}{X^5} = X^{-5}$

**11.** $Y^{-2} = \dfrac{1}{Y^2}$

**12.** $7^{-2} \times 7^5 \div 7^{-2} = 7^{-2+5-(-2)} = 7^5$

**13.** $A^7 \div B^3 = A^7B^{-3}$

**14.** $\left(5^2\right)^5 = 5^{2\times5} = 5^{10}$

**15.** $(5)^{12} = (5)^{3\times4} = \left(5^3\right)^4$

**16.** $-\sqrt{169} = -13$

**17.** $C^0C^{-4}D^8D^{-7}D^{-3}C^3 = C^{0+(-4)+3}D^{8+(-7)+(-3)}$
$= C^{-1}D^{-2}$

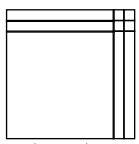
**18.**
$$\begin{array}{r} 3N+4 \\ +\ 2N+5 \\ \hline 5N+9 \end{array}$$

**19.** $5N+9 = 5(10)+9 = 50+9 = 59$

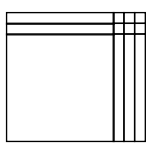
**20.**
$$\begin{array}{r} 2Y+\ 7 \\ \times\ 7Y+\ 5 \\ \hline 10Y+35 \\ 14Y^2+49Y \\ \hline 14Y^2+59Y+35 \end{array}$$

## Lesson Practice 21A

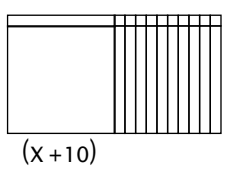
**1.**
$$\begin{array}{r} X+2 \\ \times\ X+2 \\ \hline 2X+4 \\ X^2+2X \\ \hline X^2+4X+4 \end{array}$$
$(X+2)$



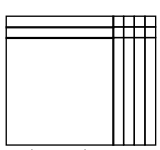

**2.**
$$\begin{array}{r} X+3 \\ \times\ X+2 \\ \hline 2X+6 \\ X^2+3X \\ \hline X^2+5X+6 \end{array}$$
$(X+2)$




**3.**
$$\begin{array}{r} X+10 \\ \times\ X+\ 1 \\ \hline X+10 \\ X^2+10X \\ \hline X^2+11X+10 \end{array}$$
$(X+1)$




**4.**
$$\begin{array}{r} X+4 \\ \times\ X+2 \\ \hline 2X+8 \\ X^2+4X \\ \hline X^2+6X+8 \end{array}$$
$(X+2)$




**5.**
$$\begin{array}{r} X+7 \\ \times\ X+1 \\ \hline X+7 \\ X^2+7X \\ \hline X^2+8X+7 \end{array}$$
$(X+1)$