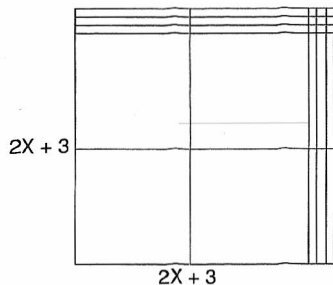
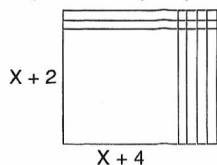


22E

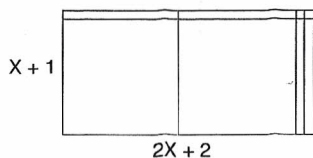
1) $(2X+3)(2X+3)$



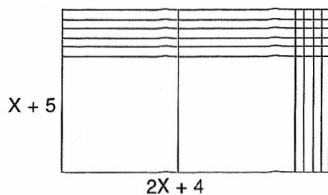
2) $2(X^2 + 6X + 8) = 2(X+4)(X+2)$



3) $2X^2 + 4X + 2$



4) $2X^2 + 14X + 20$



5) $(4X+3)(X+2)$

6)
$$\begin{array}{r} 4X+3 \\ \times X+2 \\ \hline 8X+6 \\ 4X^2+3X \\ \hline 4X^2+11X+6 \end{array}$$

7) $(2X+1)(X+5)$

8)
$$\begin{array}{r} 2X+1 \\ \times X+5 \\ \hline 10X+5 \\ 2X^2+X \\ \hline 2X^2+11X+5 \end{array}$$

9) $(X+3)(X+1)$

10)
$$\begin{array}{r} X+3 \\ \times X+1 \\ \hline X+3 \\ X^2+3X \\ \hline X^2+4X+3 \end{array}$$

11) $B^2+6\cdot5C^2\cdot5 = B^3C^{-3}$

12) Y^5+A

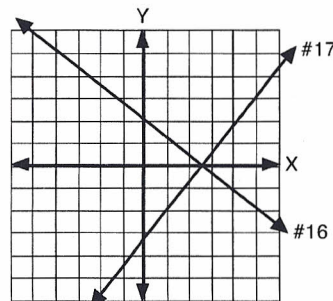
13) $D^8C^{-3}A^{-2}A^0D^7C^{-2} = A^{-2}C^{-5}D^{15}$

14) $A^5D^{-6}A^{-7}C^3D^8 = A^{-2}C^3D^2$

15) $3 \times 100,000 + 5 \times 1 + 2 \times 1/100 + 8 \times 1/1000 = 300,005.028$

16) $Y = -4/5 X + 2$
see graph

17) $m = 5/4$
 $(-2) = 5/4(1) + b$
 $b = -13/4$
 $Y = 5/4 X - 13/4$ or $5X - 4Y = 13$
see graph

18)

day	grams
1	5
2	25
3	125
4	625

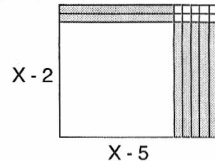
19)

day	grams
1	5 ¹
2	5 ²
3	5 ³
4	5 ⁴

20) $8 \text{ days} = 5^8$
 $Y \text{ days} = 5^Y$

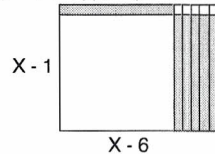
23A

1) $(X-5)(X-2)$



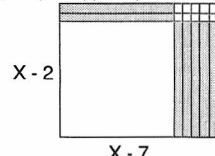
$$\begin{array}{r} X-5 \\ \times X-2 \\ \hline -2X+10 \\ X^2-5X \\ \hline X^2-7X+10 \end{array}$$

2) $(X-6)(X-1)$



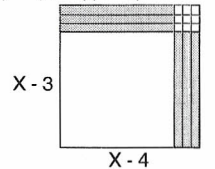
$$\begin{array}{r} X-6 \\ \times X-1 \\ \hline -X+6 \\ X^2-6X \\ \hline X^2-7X+6 \end{array}$$

3) $(X-7)(X-2)$



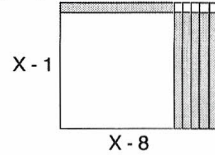
$$\begin{array}{r} X-7 \\ \times X-2 \\ \hline -2X+14 \\ X^2-7X \\ \hline X^2-9X+14 \end{array}$$

4) $(X-4)(X-3)$



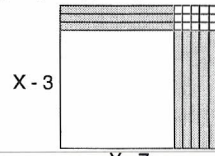
$$\begin{array}{r} X-4 \\ \times X-3 \\ \hline -3X+12 \\ X^2-4X \\ \hline X^2-7X+12 \end{array}$$

5) $(X-8)(X-1)$



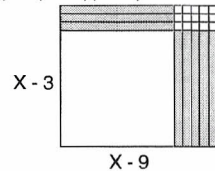
$$\begin{array}{r} X-8 \\ \times X-1 \\ \hline -X+8 \\ X^2-8X \\ \hline X^2-9X+8 \end{array}$$

6) $(X-7)(X-3)$



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

7) $(X-9)(X-3)$



$$\begin{array}{r} X-9 \\ \times X-3 \\ \hline -3X+27 \\ X^2-9X \\ \hline X^2-12X+27 \end{array}$$

8) $(X-5)(X-6)$

$$\begin{array}{r} X-5 \\ \times X-6 \\ \hline -6X+30 \\ X^2-5X \\ \hline X^2-11X+30 \end{array}$$

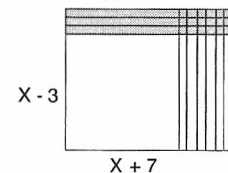
9) $(X-9)(X-10)$

$$\begin{array}{r} X-9 \\ \times X-10 \\ \hline -10X+90 \\ X^2-9X \\ \hline X^2-19X+90 \end{array}$$

10) $(X-11)(X-3)$

$$\begin{array}{r} X-11 \\ \times X-3 \\ \hline -3X+33 \\ X^2-11X \\ \hline X^2-14X+33 \end{array}$$

11) $(X+7)(X-3)$



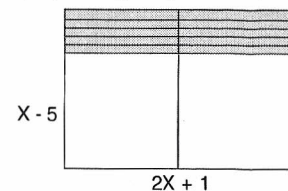
$$\begin{array}{r} X+7 \\ \times X-3 \\ \hline -3X-21 \\ X^2+7X \\ \hline X^2+4X-21 \end{array}$$

12) $(X+7)(X-5)$ Continue to check by multiplying.

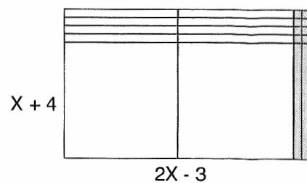
13) $(X+6)(X-3)$

14) $(X-9)(X+4)$

15) $(2X+1)(X-5)$



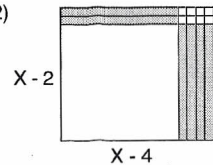
16) $(2X-3)(X+4)$



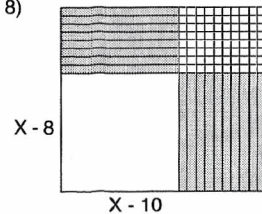
23B

Continue to check by multiplying.

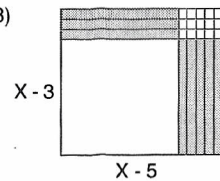
1) $(X - 4)(X - 2)$



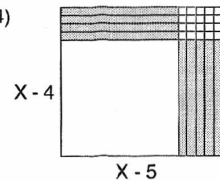
2) $(X - 10)(X - 8)$



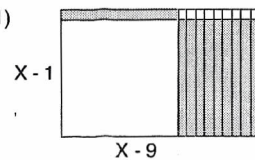
3) $(X - 5)(X - 3)$



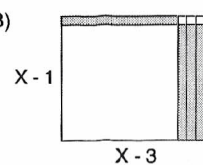
4) $(X - 5)(X - 4)$



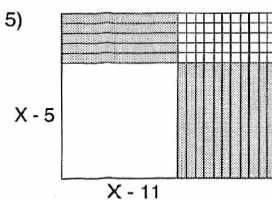
5) $(X - 9)(X - 1)$



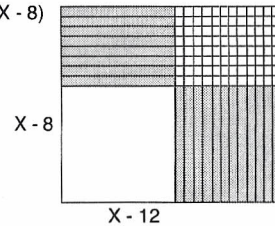
6) $(X - 1)(X - 3)$



7) $(X - 11)(X - 5)$



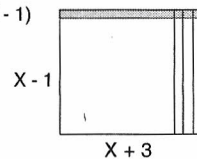
8) $(X - 12)(X - 8)$



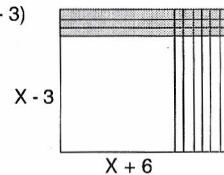
9) $(X - 7)(X - 6)$

10) $(X - 8)(X - 3)$

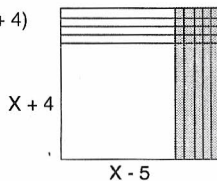
11) $(X + 3)(X - 1)$



12) $(X + 6)(X - 3)$



13) $(X - 5)(X + 4)$



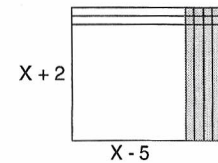
14) $(X + 5)(X - 3)$

15) $(5X - 1)(X + 2)$

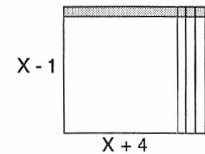
16) $(4X - 1)(X + 2)$

23C

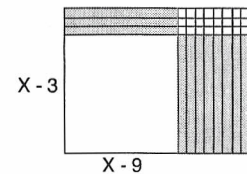
1) $(X - 5)(X + 2)$



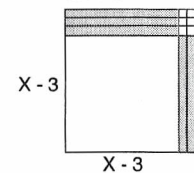
2) $(X + 4)(X - 1)$



3) $X^2 - 12X + 27$



4) $X^2 - 6X + 9$



5) $(X + 2)(X - 1)$

$$\begin{array}{r} X + 2 \\ \times X - 1 \\ \hline -X - 2 \\ X^2 + 2X \\ \hline X^2 + X - 2 \end{array}$$

7) $(X + 5)(X - 2)$

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

9) $(2X + 1)(X + 3)$

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

11) $3^{4-2-3} = 3^{-1}$

12) 7^{-15}

13) $A^5B^2A^{-4}A^{-3}B^{-7} = A^{-2}B^{-5}$

14) $2AB^{-2} + 4B^{-1}B^1A^1 + 3A^2B^{-2}A^{-1}$

$2AB^{-2} + 4B^0A^1 + 3A^1B^{-2}$

$2AB^{-2} + 4A + 3AB^{-2}$

$5AB^{-2} + 4A$

$$\begin{array}{l} 15) \quad 3(-4X) = 2X + 7 \\ \quad \quad -12X = 2X + 7 \\ \quad \quad \quad X = -1/2 \end{array} \quad \begin{array}{l} Y = -4(-1/2) \\ \quad \quad Y = 2 \end{array}$$

$(-1/2, 2)$

$$\begin{array}{l} 16) \quad 7(N + 2) + 2N - 6(N + 4) = -1 \\ \quad \quad 7N + 14 + 2N - 6N - 24 = -1 \\ \quad \quad 3N - 10 = -1 \\ \quad \quad N = 3 \end{array} \quad \begin{array}{l} 3, 5, 7 \end{array}$$

17) $.10D + .05N = .95, \quad D + N = 12$

$$\begin{array}{r} 10D + 5N = 95 \\ -5D - 5N = -60 \\ \hline 5D = 35 \end{array}$$

$D = 7$

$(7) + N = 12$

$N = 5$

18) $\frac{2}{3} \div \frac{5}{6} \times \frac{1}{2} =$

$$\frac{\cancel{2}}{\cancel{3}} \times \frac{\cancel{6}^2}{5} \times \frac{1}{\cancel{2}} = \frac{2}{5}$$

19) $20X - 2X + 140 = 209$

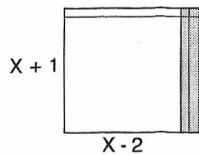
$18X = 69$

$X = 69/18 = 3 \frac{5}{6}$

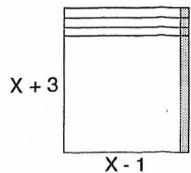
$$\begin{array}{l} 20) \quad 5.5\% = .055 \\ \quad \quad .055 \times 400 = 22 \end{array}$$

23D

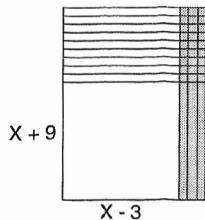
1) $(X-2)(X+1)$



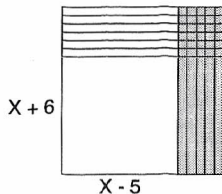
2) $(X-1)(X+3)$



3) $X^2 + 6X - 27$



4) $X^2 + X - 30$



5) $(X-4)(X+1)$

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

7) $(X-3)(X+1)$

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

9) $(X-3)(X+2)$

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

11) $10^{2 \times 7} = 10^{14}$

12) $5^{2 \times 4 \times 3} = 5^{24}$

13) $D^{-4+3-2-4+5} = D^{-2}$

14) $B^3 + 3B^3 + 5B^5 = 4B^3 + 5B^5$

$$\begin{array}{l} 15) \quad 2(-4X+5) = 4X-3 \\ \quad \quad -8X+10 = 4X-3 \\ \quad \quad \quad 13 = 12X \\ \quad \quad \quad X = 13/12 \quad Y = -4(13/12) + 5 \\ \quad \quad \quad \quad \quad \quad Y = 2/3 \\ \quad \quad \quad \quad \quad \quad (13/12, 2/3) \end{array}$$

$$\begin{array}{l} 16) \quad 4(N+1) + 3(N+2) - 8N + 11 = 0 \\ \quad \quad 4N + 4 + 3N + 6 - 8N + 11 = 0 \\ \quad \quad N = 21 \quad 21, 22, 23 \end{array}$$

$$\begin{array}{l} 17) \quad .10D + .05N = 3.30, \quad D + N = 45 \\ \quad \quad 10D + 5N = 330 \\ \quad \quad -5D - 5N = -225 \\ \hline \quad \quad 5D = 105 \\ \quad \quad D = 21 \quad (21) + N = 45 \\ \quad \quad \quad \quad N = 24 \end{array}$$

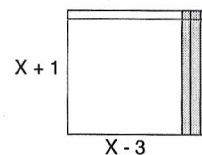
$$\begin{array}{l} 18) \quad \frac{1}{2} \div \frac{1}{2} \times \frac{3}{4} = \\ \quad \quad \frac{1}{\cancel{2}} \times \frac{\cancel{2}}{1} \times \frac{3}{4} = \frac{3}{4} \end{array}$$

$$\begin{array}{l} 19) \quad 103X + 20X - 73X = 45 \\ \quad \quad 50X = 45 \\ \quad \quad X = 9/10 \text{ or } .9 \end{array}$$

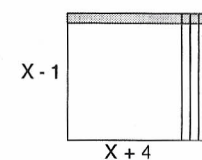
$$\begin{array}{l} 20) \quad 5.4\% = .054 \\ \quad \quad .054 \times 250 = 13.5 \end{array}$$

23E

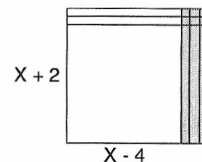
1) $(X-3)(X+1)$



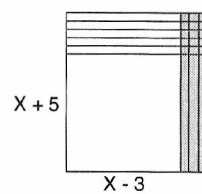
2) $(X+4)(X-1)$



3) $X^2 - 2X - 8$



4) $X^2 + 2X - 15$



5) $(X-5)(X-2)$

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

7) $(3X-7)(X-1)$

$$\begin{array}{r} x \quad 3X-7 \\ \quad X-1 \\ \hline -3X+7 \\ 3X^2-7X \\ \hline 3X^2-10X+7 \end{array}$$

9) $3(X^2 + 5X - 6) = 3(X+6)(X-1)$

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

11) $5^{4-6-2} = 5^{-4}$

12) 6^1 or 6

13) $4Q^{-1}Y^{-2} + 5Q^2Y^{-1}$

14) $5M^3N^2 + 2M^3N^4$

$$\begin{array}{l} 15) \quad X - Y = -2 \\ \quad \quad 3X + Y = 18 \\ \quad \quad \quad 4X = 16 \\ \quad \quad \quad X = 4 \end{array} \quad \begin{array}{l} 4 - Y = -2 \\ Y = 6 \\ (4, 6) \end{array}$$

$$\begin{array}{l} 16) \quad 11(N) + 2(N+2) = 6(N+4) + 1 \\ \quad \quad 11N + 2N + 4 = 6N + 24 + 1 \\ \quad \quad N = 3 \quad 3, 5, 7 \end{array}$$

$$\begin{array}{l} 17) \quad .25Q + .10D = 2.00, \quad Q + D = 14 \\ \quad \quad 25Q + 10D = 200 \\ \quad \quad -25Q - 25D = -350 \\ \hline \quad \quad -15D = -150 \\ \quad \quad D = 10 \quad Q + (10) = 14 \\ \quad \quad \quad \quad Q = 4 \end{array}$$

$$\begin{array}{l} 18) \quad \frac{3}{7} \times \frac{14}{15} \div \frac{1}{2} = \\ \quad \quad \frac{\cancel{3}}{\cancel{7}} \times \frac{\cancel{14}^2}{\cancel{15}_5} \times \frac{2}{1} = \frac{4}{5} \end{array}$$

$$\begin{array}{l} 19) \quad 36 - 8F = 20F + 12 \\ \quad \quad 24 = 28F \\ \quad \quad F = 6/7 \end{array}$$

$$\begin{array}{l} 20) \quad 6.8\% = .068 \\ \quad \quad .068 \times 95 = 6.46 \end{array}$$