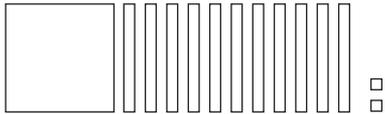


19.  $Q + N = 30$   
 $.25Q + .05N = 4.30$   
 $(.25Q + .05N = 4.30)(100) \Rightarrow 25Q + 5N = 430$   
 $(Q + N = 30)(-5) \Rightarrow \underline{-5Q - 5N = -150}$   
 $20Q = 280$   
 $Q = 14$   
 $Q + N = 30 \Rightarrow (14) + N = 30$   
 $N = 16$

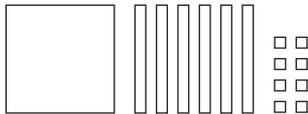
20.  $Y = -2X + 9$   
 $2X + Y = 9$

**Lesson Practice 20A**

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



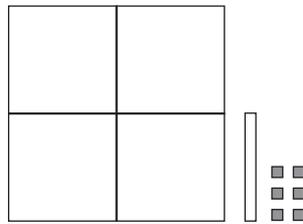
2.  $X^2 + 6X + 8$



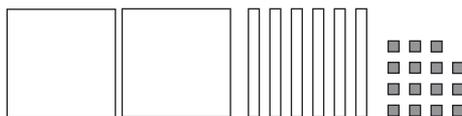
3.  $X^2 - 8$



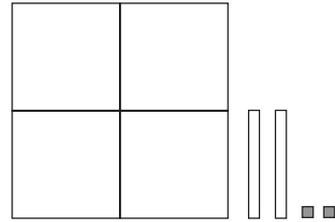
4.  $\frac{X^2 - 6X + 3}{3X^2 + 7X - 9}$   
 $\frac{4X^2 + X - 6}{4X^2 + X - 6}$



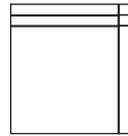
5.  $\frac{X^2 - 8}{X^2 + 6X - 7}$   
 $\frac{2X^2 + 6X - 15}{2X^2 + 6X - 15}$



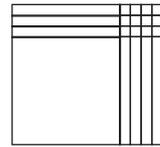
6.  $2X^2 + 10X + 7$   
 $\frac{2X^2 - 8X - 9}{4X^2 + 2X - 2}$



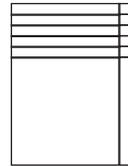
7.  $(X + 1)(X + 2) = X^2 + 3X + 2$



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



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



10.  $\frac{3X + 2}{X + 1}$   
 $\frac{3X^2 + 2X}{3X^2 + 5X + 2}$

11.  $\frac{5X + 5}{X + 2}$   
 $\frac{5X^2 + 5X}{5X^2 + 15X + 10}$

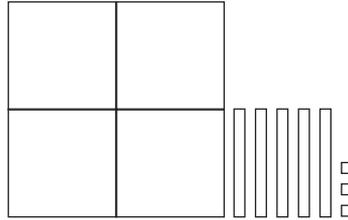
12.  $\frac{2X + 1}{X + 5}$   
 $\frac{2X^2 + X}{2X^2 + 11X + 5}$

13.  $\frac{X + 8}{3X + 5}$   
 $\frac{3X^2 + 24X}{3X^2 + 29X + 40}$

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

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

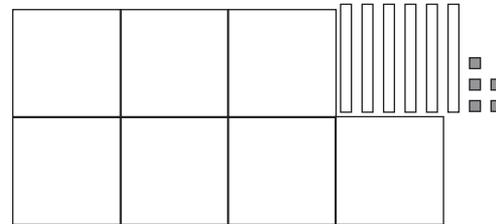
$$\begin{array}{r} 5. \quad X^2+6X+5 \\ 3X^2-X-2 \\ \hline 4X^2+5X+3 \end{array}$$



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

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

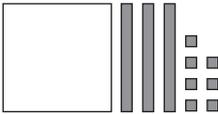
$$\begin{array}{r} 6. \quad 5X^2-5X-10 \\ 2X^2+11X+5 \\ \hline 7X^2+6X-5 \end{array}$$



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

**Lesson Practice 20B**

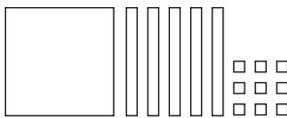
1.  $X^2 - 3X - 7$



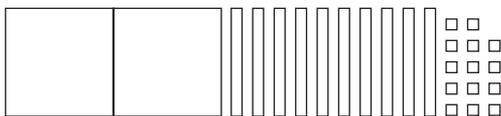
2.  $2X^2 - 7X - 3$



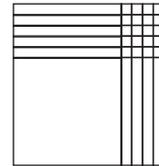
3.  $X^2 + 5X + 9$



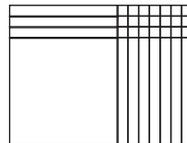
$$\begin{array}{r} 4. \quad X^2+3X+2 \\ X^2+7X+12 \\ \hline 2X^2+10X+14 \end{array}$$



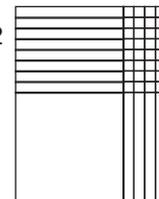
7.  $(X+4)(X+5) = X^2 + 9X + 20$



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



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

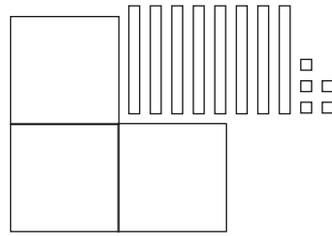


$$\begin{array}{r} 10. \quad 7X+1 \\ \times X+2 \\ \hline 14X+2 \\ 7X^2+X \\ \hline 7X^2+15X+2 \end{array}$$

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

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

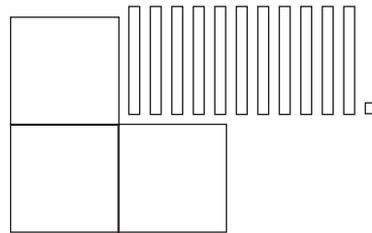
$$\begin{array}{r} 13. \quad X+8 \\ \quad \times X-3 \\ \hline -3X-24 \\ X^2+8X \\ \hline X^2+5X-24 \end{array}$$



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

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

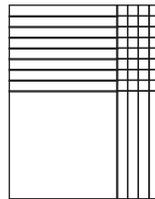
$$\begin{array}{r} 3. \quad 4X^2+8X+2 \\ \quad -X^2+3X-1 \\ \hline 3X^2+11X+1 \end{array}$$



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

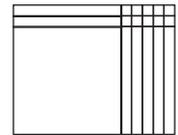
$$\begin{array}{r} 17. \quad 5X+2 \\ \quad \times 3X-3 \\ \hline -15X-6 \\ 15X^2-6X \\ \hline 15X^2-9X-6 \end{array}$$

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



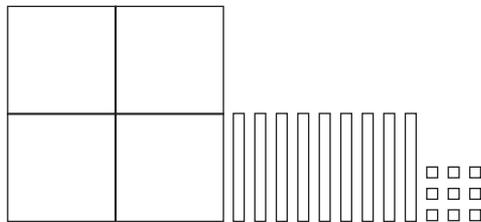
$$\begin{array}{r} 18. \quad 3X+7 \\ \quad \times 4X+2 \\ \hline 6X+14 \\ 12X^2+28X \\ \hline 12X^2+34X+14 \end{array}$$

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



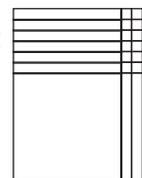
### Systematic Review 20C

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



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

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



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

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

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

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

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

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

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

$$14. (5^2)^5 = 5^{2 \times 5} = 5^{10}$$

$$15. (5)^{12} = (5)^{3 \times 4} = (5^3)^4$$

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

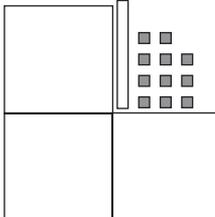
$$17. C^{-5} \times C^2 = C^{-5+2} = C^{-3}$$

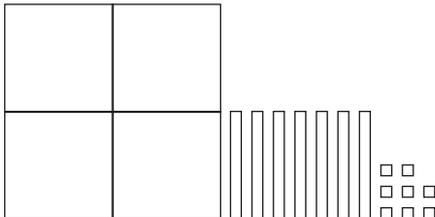
$$\begin{array}{r} 18. \quad X+4 \\ \quad \times X+5 \\ \hline 5X+20 \\ X^2+4X \\ \hline X^2+9X+20 \end{array}$$

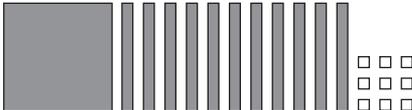
$$19. A = X^2 + 9X + 20 = (6)^2 + 9(6) + 20 = 36 + 54 + 20 = 110 \text{ square units}$$

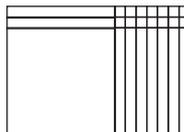
$$\begin{array}{r} 20. (X+4)(2) \Rightarrow 2X + 8 \\ (X+5)(2) \Rightarrow \quad \times 2X+10 \\ \hline 20X+80 \\ 4X^2+16X \\ \hline 4X^2+36X+80 \end{array}$$

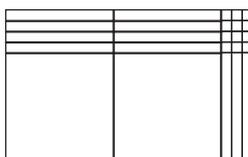
### Systematic Review 20D

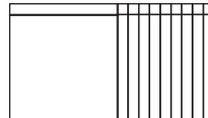
$$1. \begin{array}{r} X^2-3X-7 \\ 2X^2+4X-4 \\ \hline 3X^2+ X-11 \end{array}$$


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


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


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


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


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


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

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

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

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

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

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.  $(8^3)^6 = 8^{3 \times 6} = 8^{18}$

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

16.  $\sqrt{225} = 15$

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

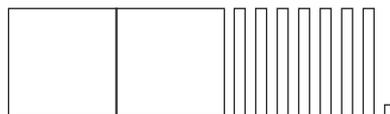
$$18. \begin{array}{r} 2X+4 \\ \times X+4 \\ \hline 8X+16 \\ 2X^2+4X \\ \hline 2X^2+12X+16 \end{array}$$

19.  $A = 2X^2 + 12X + 16 =$   
 $2(10)^2 + 12(10) + 16 =$   
 $2(100) + 120 + 16 =$   
 $200 + 120 + 16 = 336$  square units

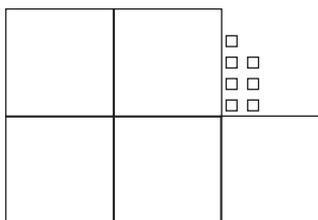
$$20. \begin{array}{r} 2X^2+12X+16 \\ \underline{X^2+3X+1} \\ 3X^2+15X+17 \end{array}$$

**Systematic Review 20E**

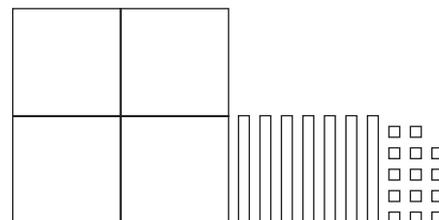
$$1. \begin{array}{r} X^2+3X-2 \\ \underline{X^2+4X+3} \\ 2X^2+7X+1 \end{array}$$



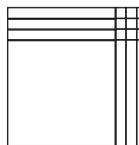
$$2. \begin{array}{r} 3X^2+2X-1 \\ \underline{2X^2-2X+8} \\ 5X^2+7 \end{array}$$



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



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





6. Let  $X = 1$ st digit, and  $Y = 2$ nd

$$\begin{aligned} X + Y &= 10 \\ 10Y + X &= 36 + 10X + Y \\ 9Y &= 36 + 9X \\ -9X + 9Y &= 36 \\ \hline +(9X + 9Y &= 90) \quad \text{1st eq. multiplied by 9} \\ 18Y &= 126 \\ Y &= 7 \text{ (second digit)} \\ 10 - 7 &= 3 \text{ (first digit)} \\ \text{number is } &37 \\ 73 - 37 &= 36 \end{aligned}$$

5. The rate of increase increases over time.

### Honors Lesson 20H

1.  $x = \#$  of months;  $m =$  mass in grams

$x$	0	1	2	3	4
$m$	200	100	50	25	12.5

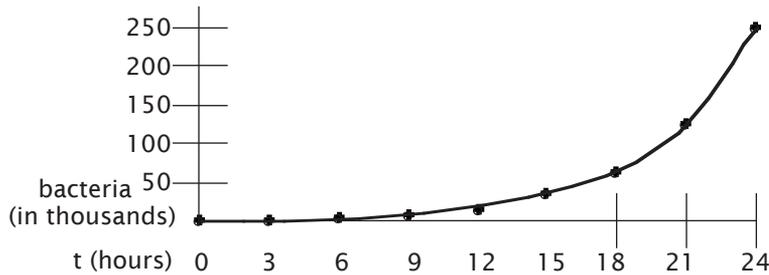
- 200 g
- 1 month
- 2 months
- 12.5 g

### Honors Lesson 19H

1.  $t =$  hours;  $b =$  bacteria in thousands

$t$	0	3	6	9	12	15	18	21	24
$b$	1	2	4	8	16	32	64	128	256

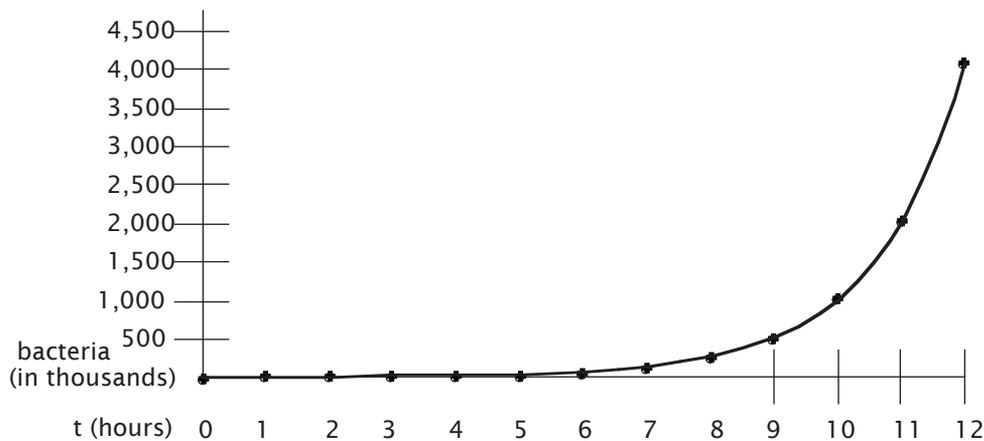
- 2.

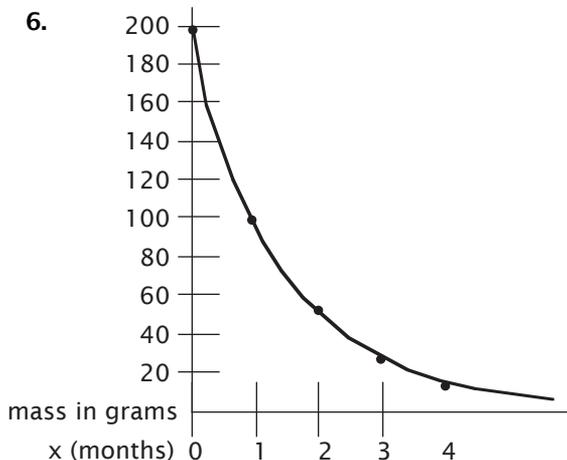


3.  $t =$  hours;  $b =$  bacteria in thousands

$t$	0	1	2	3	4	5	6	7	8	9	10	11	12
$b$	1	2	4	8	16	32	64	128	256	512	1,024	2,048	4,096

- 4.





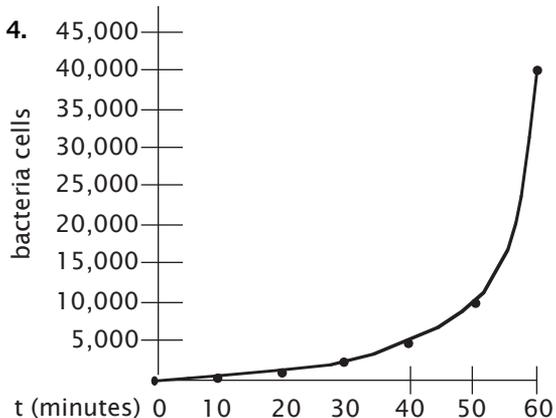
7.  $m = 200(.5)^x$   
 $m = 200(.5)^6$   
 $m = 200(.0156) = 3.125 \text{ g}$

### Honors Lesson 21H

1. done

2.  $B = (A)2^{\frac{x}{D}}$   
 $B = 10\left(2^{\frac{30}{5}}\right)$   
 $B = (2^6)$   
 $B = 10(64) = 640$

3.  $B = 10\left(2^{\frac{60}{5}}\right)$   
 $B = 10(2^{12})$   
 $B = 10(4096) = 40,960$



### Honors Lesson 22H

- never true:  $3^{-2} = \frac{1}{9}$
- sometimes true:  $\left(\frac{1}{3}\right)^{-2} = 9$
- never true:  $\frac{1}{7} \neq \frac{1}{2} + \frac{1}{5}$
- never true:  $\frac{2}{x^0} = \frac{2}{1} = 2$
- always true:  $1 - 1 = 0$
- never true:  $8^{-1} = \frac{1}{8}$
- always true: a number multiplied by its reciprocal always equals 1.
- always true: When raising a power to a power, you multiply exponents.

9.

X	Y
0	4
1	5
2	7
-1	3.5
-2	3.25

