1-73. See below.

a. x^{11}

b. x^9

c. m^{12}

d. $x^8 y^8$

e. $x^3 y^8$

f. $\frac{1}{4} x^{10}$ or $\frac{x^{10}}{4}$

1-75. See below.

a. $\frac{1}{x} = x^{4-5} = x^{-1}$

b. $\frac{1}{x^2} = x^{2-4} = x^{-2}$

c. $\frac{1}{x^3} = x^{7-10} = x^{-3}$

1-74. See below.

	Expression	Generalization	Why is this true?
a.	$x^{25} \cdot x^{40} = ?$ [x^{65}]	$x^m \cdot x^n = ?$ [x^{m+n}]	If you have m x's and n x's multiplied together, you then have a product of $(m + n)$ x's.
b.	$\frac{x^{36}}{x^{13}} = ?$ [x^{23}]	$\frac{x^m}{x^n} = ?$ [x^{m-n}]	Many of the x's in the numerator and denominator make "1s," leaving $(m - n)$ x's.
c.	$(x^5)^{12} = ?$ [x^{60}]	$(x^m)^n = ?$ [x^{mn}]	If you have n sets of m x's, then you have mn x's.

1-76. The value of $\frac{x^m}{x^m}$ is 1 because any number divided by itself is 1. It can also be rewritten as x^{m-m}. Thus $x^0 = 1$ (assuming $x \neq 0$).

1-77. See below.

a. $\frac{3y}{5x^3}$

b. $\frac{10x}{y}$

c. $\frac{x}{3}$

1-78. $\frac{1.06\times10^7}{1.4\times10^{-1}} \approx 7.6 \times 10^7$. See the "Suggested Lesson Activity".

1-81. See below.

  a. $\frac{1}{4}$

  b. 1

  c. $\frac{1}{5^2} = \frac{1}{25}$

  d. $\frac{1}{x^2}$

1-82. See below.

  a. 2

  b. 53

1-83. See below.

  (a) and (b) are functions because each only has one output for each input.

  d. a: D: all real numbers, R: $1 \leq y \leq 3$;
     b: D: all real numbers, R: $y \geq 0$;
     c: D: $x \geq -2$, R: all real numbers

1-84. See below.

  a. 1.6×10^8

  b. 5.8413×10^{10}

1-85. The unshaded triangle is half the area of the rectangle $(0.5(8)(17) = 68 \text{ in}^2)$, so the shaded area is the other half.