

**Preparation for Algebra
Math 085**

Evaluates/Practice Tests

For solutions to F2.1 – 2.2, refer to the back of the PAN.
For solutions to 3.1 and 6.1-3, refer to the handouts or the solutions in the back of the *Elementary Algebra* (yellow) PAN.



Evaluate

Take this Practice Test to prepare for the final quiz in the Evaluate module of this lesson on the computer.

Practice Test

1. Fill in the missing numerator that makes the fractions equivalent.

$$\frac{5}{8} = \frac{?}{32}$$

2. Choose the fraction that is equivalent to $\frac{2}{7}$.

$$\frac{4}{14} \quad \frac{5}{16} \quad \frac{3}{8}$$

3. Find the greatest common factor (GCF) of 42 and 30.

4. Simplify to lowest terms: $\frac{30}{75}$

5. A soup recipe calls for $3\frac{3}{4}$ cups of broth. Write the mixed numeral $3\frac{3}{4}$ as an improper fraction.

6. Do the multiplication below. Write the answer in lowest terms.

$$\frac{1}{2} \times \frac{14}{25}$$

7. Do the division below. Write the answer as an improper fraction in lowest terms.

$$4\frac{1}{3} \div \frac{5}{6}$$

8. Find the value of z in this equation: $\frac{2}{7} \times z = 12$



Evaluate

Take this Practice Test to prepare for the final quiz in the Evaluate module of this lesson on the computer.

Practice Test

1. Rewrite the fractions $\frac{2}{7}$ and $\frac{10}{11}$ with their least common denominator, 77.

$$\frac{2}{7} = \frac{?}{77} \quad \frac{10}{11} = \frac{?}{77}$$

2. Choose all of the numbers below which are common denominators of the fractions $\frac{5}{6}$ and $\frac{7}{10}$.

60 30 35 16

3. Find the least common denominator of the fractions $\frac{5}{18}$ and $\frac{11}{45}$.

4. Choose the fraction below with the least value.

$$\frac{7}{8} \quad \frac{5}{7} \quad \frac{6}{7}$$

5. Find: $4\frac{6}{11} - 2\frac{8}{11}$

6. Choose the expression below that is equal to $13 + \frac{1}{6}x + \frac{1}{9}x - 7$

$$6 + \frac{1}{15}x \quad 6 + \frac{5}{18}x \quad 6 + x \quad 20 - \frac{1}{18}x$$

7. Find $\frac{1}{14} \div \frac{1}{2} + \frac{1}{4} \times \left(\frac{2}{7} - \frac{1}{7}\right)$.

8. Find the value of x : $x + \frac{3}{10} = \frac{2}{3}$



Evaluate

Take this Practice Test to prepare for the final quiz in the Evaluate module of this lesson on the computer.

Practice Test

- To make trail mix for backpacking, Elena mixes 3 pounds of raisins with 7 pounds of peanuts. What decimal number represents the fraction of raisins in the 10-pound mixture? What decimal number represents the fraction of peanuts?
- Write each of the following as a decimal number:
 - fifteen and eight hundredths
 - nine and thirty-six thousandths
- Arrange the following decimal numbers in order from greatest to least:
0.03 0.30 0.29 0.31 0.003
- Round each of the following decimal numbers.
 - 12.3456 to the nearest thousandth
 - 12.3456 to the nearest tenth
 - 0.5555... to the nearest hundredth
- Write each of the following decimal numbers as a fraction. Reduce each fraction to lowest terms.
 - 0.3
 - 0.65
 - 0.168
- Write each of the following fractions as a decimal number.
 - $\frac{7}{10}$
 - $\frac{3}{20}$
 - $\frac{8}{11}$
- Amy recorded the number of days of rain for three cities in Alaska. She recorded each city for a different period of time. Here are her results:

City	Number of Days of Rain	Total Number of Days Recorded
Ketchikan	17	20
Anchorage	63	100
Fairbanks	7	25

For each city, make a fraction by putting the number of days of rain over the total number of days recorded. Find the wettest city by ordering these fractions from greatest to least.



Evaluate

Take this Practice Test to prepare for the final quiz in the Evaluate module of this lesson on the computer.

Practice Test

1. Do this addition: $0.7 + 1.38 + 2.946$
2. Caroline bought a bottle of perfume for \$34.28. She gave the cashier a fifty dollar bill. How much change did she receive?
3. Do this addition and subtraction:
 $2.3a + 5.7b + 0.9 + 4.8b - 1.9a$
4. Find the value of x in this equation:
 $x + 2.37 = 5.94$
5. Do this multiplication:
 7.3×0.28
6. A candy bar costs \$0.65. How many candy bars can Zack buy for \$18.85?
7. Find the value of x in this equation:
 $0.39x = 1.794$
8. Use order of operations to evaluate this expression:
 $5.1 \times [2.3 + (3.1 - 1.9)] \div 2 + 19.23$



Evaluate

Take this Practice Test to prepare for the final quiz in the Evaluate module of the computer.

Practice Test

1. In a choir consisting of sopranos, altos, tenors, and basses, there are 49 singers. Of this number, 15 are sopranos and 16 are tenors.

- a. What is the ratio of the number of sopranos to the number of tenors?
- b. What is the ratio of the number of sopranos to the number of singers?

2. In a fruit and nut mix, the ratio of the number of fruits to the number of nuts is 5 to 9.

Select all the choices below that will keep the mix at this same ratio.

- a. Add 5 fruits and 9 nuts to the mix.
- b. Add 5 fruits and 5 nuts to the mix.
- c. Add 9 fruits and 5 nuts to the mix.
- d. Add 10 fruits and 18 nuts to the mix.

3. Write a ratio to compare 47 cents to 3 dollars.

4. Nancy drove 360 miles in 8 hours. Find the rate that she drove in miles per hour.

5. Choose the ratio below that forms a proportion with the ratio $\frac{14}{18}$.

- a. $\frac{13}{17}$
- b. $\frac{21}{27}$
- c. $\frac{9}{7}$
- d. $\frac{8}{10}$

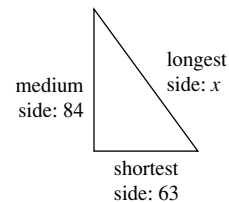
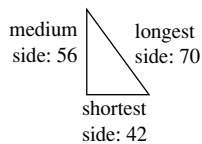
6. Solve this proportion for x : $\frac{20}{x} = \frac{5}{11}$

7. After hiking 5.6 miles, Sharon found that she was $\frac{4}{5}$ of the way along the trail.

Use this proportion to find x , the length of the trail in miles: $\frac{5.6}{x} = \frac{4}{5}$

8. The two triangles shown below are similar triangles. That is, the lengths of their corresponding sides are in the same ratio.

Use this proportion to find x , the missing length: $\frac{70}{x} = \frac{42}{63}$





Evaluate

Take this Practice Test to prepare for the final quiz in the Evaluate module of this lesson on the computer.

Practice Test

- Write each percent as a decimal number.
 - 26%
 - 192%
- For the 100-square grids in Figures 14 and 15, find the percent that is shaded.

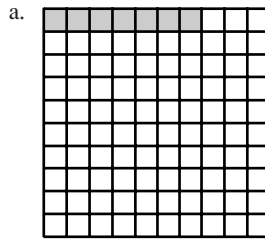


Figure 15

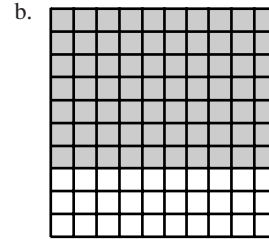


Figure 16

- The number line in Figure 16 is divided into four parts of equal length. Use the number line to answer this question: 27 is what percent of 36?

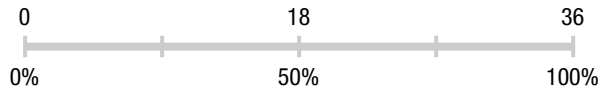


Figure 16

- Use the number line in Figure 17 to find 37.5% of 560.

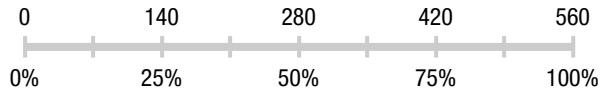


Figure 17

- Write 243.7% as a decimal number.
- Write the decimal number 5.132 as a percent.
- Circle the expression(s) below that are equal to 72%.

7.2 0.72 $\frac{72}{100}$ $\frac{72}{1000}$ $\frac{18}{25}$
- Last year, the original price of a popular sweater was \$40. This year, the price is \$54. Find the percent increase in price.

-
9. On an algebra test, Mario answered 30% of the questions correctly. The test contained a total of 80 questions. How many questions did Mario answer correctly? That is, what is 30% of 80?
 10. 16 is what percent of 25?
 11. A new company has hired 13 employees. This is 20% of the number of employees it expects to have at the end of next year. How many employees does it expect to have next year? That is, 13 is 20% of what number?
 12. When Cindy and Tony arrived at the airport, they found that their luggage weighed 45 pounds. This is 25% more than the accepted weight limit. What is the weight limit for luggage? That is, 45 is 125% of what number?

Take this Practice Test to prepare for the final quiz in the Evaluate module of the computer.

Practice Test

1. Choose the number below that has the greatest value.

$$|-34| \quad -42 \quad 27 \quad |12|$$

2. On a cold morning, the temperature at sunrise was -22° . By noon, the temperature had increased by 15° . To help find the temperature at noon, do this addition.

$$-22 + 15 = \underline{\hspace{2cm}}$$

3. When Barbara's checking account balance fell below zero, to $-\$23.56$, the bank charged her a penalty of $\$12$.

To help find Barbara's balance after the penalty, do the addition below.

$$-23.56 + (-12) = \underline{\hspace{2cm}}$$

4. Do this addition: $\frac{3}{4} + \left(-\frac{2}{3}\right) + \left(-\frac{1}{4}\right) + \frac{11}{12}$

5. Choose the expression below that is the same as: $345 - (-2589)$

$$-345 + 2589 \quad 345 + 2589 \quad 2589 - 345 \quad 345 - 2589$$

6. Find: $-37.91 - (46.74)$

7. Find: $76 - (-102) - 37$

8. Solve this equation for x : $x + 36 = -36$
 $x = \underline{\hspace{2cm}}$



Take this Practice Test to prepare for the final quiz in the Evaluate module of this lesson on the computer.

Practice Test

- Do each multiplication.
 - $(-7) \times (9)$
 - $(-9) \times (-7)$
- Choose the expression that has a positive value.
 - $3.1 \times 15 \times (-2.5)$
 - $-6 \times (-4.2) \times 24$
 - $-2.4 \times (-32) \times (-5.5)$
- Do each division.
 - $15 \div (-3)$
 - $(-24) \div (-6)$
- Solve this equation for x : $13x = -91$
- Find the value of each exponential expression.
 - $(-4)^3$
 - $(-4)^2$
- Use the order of operations to find the value of this expression.
 $8 + (-5) \times [(-10) + 24 \div 4]$
- Fill in the numbers that correctly illustrate the Distributive Property.
 $11 \times [25 + (-8)] = 11 \times \underline{\quad} + \underline{\quad} \times (-8)$
- Do this addition and subtraction: $17 - 35 + 7x + 13 - 4x$

Practice Test

Take this practice test to be sure that you are prepared for the final quiz in Evaluate.

1. Circle the true statements.

$$3 > -4$$

$$-5 > -7$$

$$2 < 2$$

$$0 \geq 3$$

$$-6 \leq -6$$

$$-1 \geq -1$$

2. Find the absolute values:

a. $|8|$

b. $|-12.18|$

c. $|-0.23|$

d. $|15|$

e. $|3.7|$

3. Which of the symbols, $>$, $<$, \geq , \leq , $=$, and \neq , could replace the ? below to make a true statement?

$$-7 ? -9$$

4. Which of the following is a rational number between 0 and 1?

$$(.91)^2$$

$$\sqrt{.91}$$

$$\frac{1}{\sqrt{2}}$$

$$-\left|\frac{2}{3}\right|$$

5. The population of a colony of insects raised in a laboratory doubles every week. If you start with 2 insects, you will have 4 insects after 1 week, 8 insects after 2 weeks, and so on. How many insects will you have after 4 weeks?

$$5 \cdot 2$$

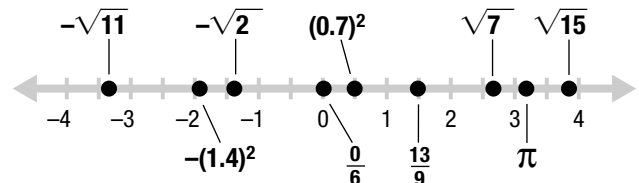
$$4^2$$

$$2 + 2 + 2 + 2$$

$$2^4$$

$$2^5$$

6. A and B are two points on a number line, and $A < B$. If $A = -1$ and the distance between the two points is 2.5, what is the coordinate of B ?
7. Find the points on the given number line which have an absolute value less than 2.



8. Which expression represents the distance on the number line between -47 and 36 ?

$$|-47 + 36|$$

$$|36 - 47|$$

$$|36 + 47|$$

$$|-47| - |36|$$



Practice Test

Take this practice test to be sure that you are prepared for the final quiz in Evaluate.

1. What are the coefficients in the expression $2x^2y - y + 7xy - 4y^3 + 12$?
2. Simplify the following expression by using the distributive property and combining like terms: $7(x + 3) + 2(9 - x)$.
3. Simplify the following expression by using the distributive property and combining like terms:
 $y(3 - y) + 5(x + y^2) - x(2 - 7y)$.
4. Evaluate the expression $2x^3 - 4x^2 + 7x - 6$ when $x = 2$.
5. Evaluate the expression $5x + 2xy - 5y^2$ when $x = 3$ and $y = -2$.
6. Simplify the following expression by using the distributive property and combining like terms:
 $y(6 + y) - 5(y^2 - 1) + 2$.
7. Evaluate the expression $4x^2y + y - 5xy^2 - 15$ when $x = 5$ and $y = 3$.
8. Simplify the following expression by using the distributive property and combining like terms:
 $x^2(3 + y) - 2(5x - x^2) + 6x^2y$.



Practice Test

Take this practice test to be sure that you are prepared for the final quiz in Evaluate.

1. Solve for x : $x + 16 = 5$
2. To isolate z in the equation $-\frac{1}{2}z = 6$, by what number do you multiply both sides of the equation?
3. Solve for y : $-2y = 18$
4. Solve for x : $3x - 4 = 11$
5. Solve for x : $3(2x + 4) = 2(3x + 6)$
6. Solve for y : $2(y - 10) = 10 + 2y$
7. To solve the equation $8x - 2 = 6 - 2x$, you might begin by adding $2x$ to both sides of the equation. What would be the resulting equation?
8. Solve for z : $\frac{1}{4}(z + 3) = 1$
9. What is the resulting equation when you use the distributive property to remove parentheses from the equation $5(3x - 2) = 2(x + 3)$?
10. Solve for x : $-\frac{2}{3}(1 - 4x) = \frac{2}{9}(5x + 4)$
11. Solve for y : $8x - y = 5$
12. Solve for x : $8x - y = 5$

Practice Test

Take this practice test to be sure that you are prepared for the final quiz in Evaluate.

Use Figure 3.1.19 to answer questions (1) – (3).

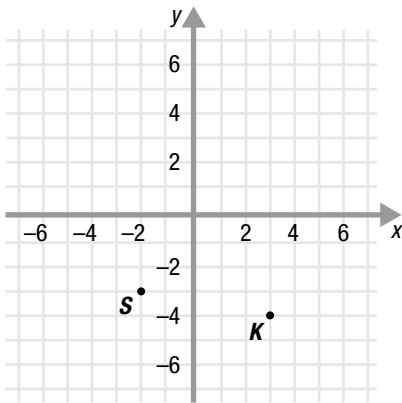


Figure 3.1.19

1. Find the coordinates of point K .
2. Plot the point $P(5, 2.5)$.
3. In what quadrant does the point $S(-2, -3)$ lie?
4. For selected years, average gas mileage for American cars is listed in the table below (rounded to the nearest whole number). Plot the ordered pairs (year, mileage) on the set of axes provided in Figure 3.1.20.

Year	Average Gas Mileage (mpg)
1970	14
1975	15
1980	23
1985	26
1990	27

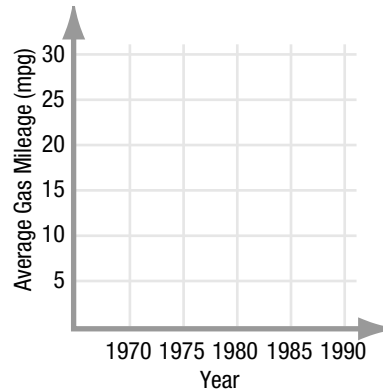


Figure 3.1.20

5. Find the rise and the run in moving from point $P_1(1, -5)$ to $P_2(7, 5)$ by drawing one vertical and one horizontal line on the grid in Figure 3.1.21.

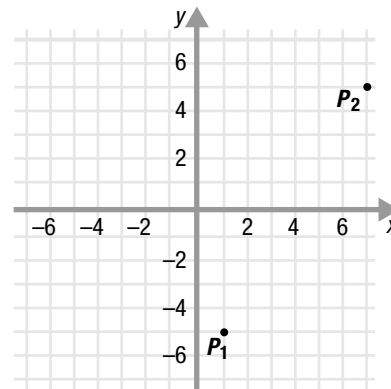


Figure 3.1.21

6. Find the rise and the run from $P_1(-7, -8)$ to $P_2(0, 4)$ by subtracting the appropriate coordinates.
7. Find the rise and the run from $P_1(-12, 7)$ to $P_2(24, 16)$ by subtracting the appropriate coordinates.

8. The average price for a gallon of gasoline is plotted in Figure 3.1.22 for selected years. Use this information to determine which five-year period had the greatest rise in gas prices.

Year	Price (cents)
1950	26.8
1955	29.1
1960	31.1
1965	31.2
1970	35.7
1975	56.7
1980	119.1
1985	111.5
1990	114.9

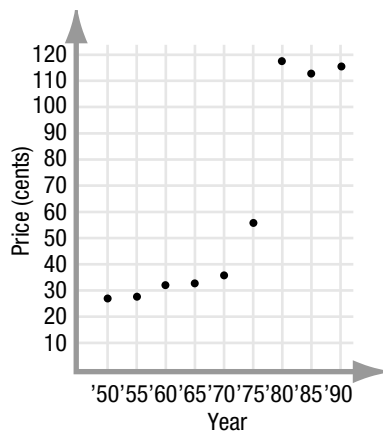


Figure 3.1.22

9. If $a = 9$ and $b = 12$, use the Pythagorean Theorem to find c , the length of the hypotenuse of the right triangle shown in Figure 3.1.23.

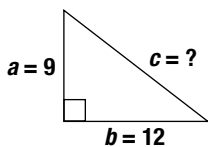


Figure 3.1.23

10. Use the Pythagorean Theorem to find the distance between the points $(-3, 1)$ and $(1, -2)$. See Figure 3.1.24.

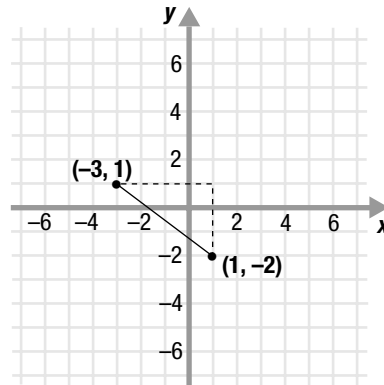


Figure 3.1.24

11. Use the distance formula to find the distance between the points $(10, 2)$ and $(-2, -7)$.
12. Find the radius and the center of the circle whose equation is below.
- $$(x - 1)^2 + [y - (-5)]^2 = 2^2$$
13. A point with a negative x -coordinate and a positive y -coordinate lies in which quadrant?

Use Figure 3.1.25 to answer questions (14) – (16).

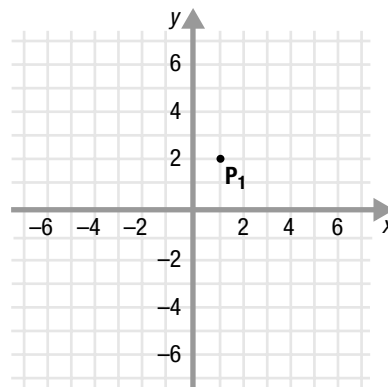


Figure 3.1.25

14. Plot a point in Quadrant III whose x -coordinate is -4 .
15. Starting at the point $P_1(1, 2)$, find the coordinates of P_2 if the rise from P_1 to P_2 is 5 and the run is 1.
16. Plot a point, (x, y) , where $y = x - 1$.

Practice Test

Take this practice test to be sure that you are prepared for the final quiz in Evaluate.

- Rewrite each expression below. Keep your answer in exponential form where possible.
 - $11 \cdot 11 \cdot 11 \cdot 11$
 - $3 \cdot 3 \cdot y \cdot y \cdot y \cdot y \cdot y$
 - $5^{12} \cdot 5^8 \cdot 5^{23}$
 - $x^7 \cdot y \cdot y^{19} \cdot x^{14} \cdot y^6$
 - $7^8 \cdot b^5 \cdot b^8 \cdot 7^{10} \cdot b$
- Rewrite each expression below in simplest form using exponents.
 - $\frac{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2}{2 \cdot 2 \cdot 2}$
 - $\frac{b^{20}}{b^{14}}$
 - $\frac{3^{12} \cdot x^7}{3^9 \cdot x^{16}}$
 - $\frac{y^{17}}{y^{14} \cdot y^3 \cdot y^4}$
- Circle the expressions below that simplify to $\frac{x^3}{y^5}$.

$\frac{x^6 y^2}{x^3 y^7}$	$\frac{y^{11} x^5}{y^2 x^4}$
$\frac{xy^9}{x^6 y^4}$	$\frac{x^7 y}{x^4 y^6}$
- Circle the expressions below that simplify to $5y$.

$$(31x^8)^0 \cdot 5y$$

$$-(-5y)^0$$

$$\frac{5y^2}{y}$$

$$\frac{(5y)^2}{5y}$$

$$\frac{5 \cdot 5 \cdot 5 \cdot y \cdot y \cdot y \cdot y}{5 \cdot 5 \cdot y \cdot y}$$
- Simplify each expression below.
 - $(b^4 \cdot b^2)^8$
 - $(3^5 \cdot a^6)^2$
 - $(2^9 \cdot x^4 \cdot y^6)^{11}$
- Simplify each expression below.
 - $\left(\frac{5y^{10}}{3x^8}\right)^4$
 - $\left(\frac{7a^3 b^4}{5a^2}\right)^6$
- Calculate the value of each expression below.
 - $(4x)^0 - 2y^0$
 - $(5xy^2 \cdot 4x^3)^0$
 - $-2x^0 - y^0$
 - $\frac{(4x)^0}{2} + \frac{3x^0}{2} + \frac{-2x^0}{2}$
- Rewrite each expression below using a single exponent.
 - $\left(\frac{a^4 \cdot a^5}{a \cdot a^3}\right)^7$
 - $\left(\frac{a \cdot a^3}{a^4 \cdot a^5}\right)^7$

Practice Test

Take this practice test to be sure that you are prepared for the final quiz in Evaluate.

1. Circle the expressions that are polynomials.

$$-\sqrt{325}$$

$$t^2 - s + 5$$

$$m^5n^4o^3p^2r$$

$$\frac{2}{5}p^3r - 3p^2q + \sqrt{2r}$$

$$\frac{5}{7}c^{15} + \frac{3}{14}c^{11} - 3\pi$$

$$x^2 + 3xy - \frac{2}{3x} + y^2$$

2. Write m beside the monomial(s), b beside the binomial(s), and t beside the trinomial(s).

a. ___ w^5x^4

b. ___ $2x^2 - 36$

c. ___ $\frac{1}{3}x^{17} + \frac{2}{3}x^{12} - \frac{1}{3}$

d. ___ 27

e. ___ $27x^3 - 2x^2y^3$

f. ___ $x^2 + 3xy - \frac{2}{3}y^2$

3. Given the polynomial $3w^3 - 13w^2 + 7w^5 + 8w^8 - 2$, write the terms in descending order by degree.

4. Find:

a. $(5x^3y - 8x^2y^2 + 3xy - y^3 + 13) + (-2xy + 6 + y^2 - 4y^3 - 2x^3y)$

b. $(5x^3y - 8x^2y^2 + 3xy - y^3 + 13) - (-2xy + 6 + y^2 - 4y^3 - 2x^3y)$

5. Find: $x^3y^2w \cdot x^5yw^4$

6. Find: $n^2p^3(3n + 2n^3p^2 - 35p^4)$

7. Find: $21x^5y^2z^7 \div 14xyz$

8. Find: $(15t^3u^2v - 5t^5uv^2) \div 10tuv^2$

Practice Test

Take this practice test to be sure that you are prepared for the final quiz in Evaluate.

1. Use the FOIL method to find: $(2x^2 + 3xy)(3x^3y - 2)$

2. Use a pattern to find: $(2x - 3y)^2$

3. Find: $(2x + 3y)^2$

4. Use a pattern to find: $(2x - 3y)(2x + 3y)$

5. Find: $(3x - 2)(5x^2 + 8x - 2)$

6. Find: $(3p^2 + 4r^4 - 5)(3r^4 - 6p^2 + 2)$

7. Find: $(6t^2 + 5t + 1) \div (2t + 1)$

8. Find: $(8x^3 + 6x - 2) \div (4x + 2)$

9a. Find: $(a^3 - a^5)(a + a^2)$

b. What is the degree of the resulting polynomial?

10. Find: $(5y^4 - 2y^2 + y)(3y^2 - y + 2)$

11. Use the table in Figure 6.3.1 to find:

$$(2x^3 - 3x + 7)(5x^4 + 8)$$

	$2x^3$	$-3x$	7
$5x^4$			
8			

Figure 6.3.1

12. Use the table in Figure 6.3.2 to find:

$$(5x^4 - 7x^3 + 7x^2 - 8x)(x^2 + 1)$$

x^2				$-8x^3$
1	$5x^4$		$7x^2$	

Figure 6.3.2