

# MA 104 INTRODUCTORY ALGEBRA

-A JUST IN TIME APPROACH-

## PRACTICE TEST TWO

Sections: 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3.

1. Estimate 7(\$19.98). Multiply mentally, and describe any shortcuts you use. [2.3]

2. Use short cuts to find the sums and products. [2.3]

a)  $3.5 + 1.25 + 7.75 + 5.5$

b)  $\frac{1}{3} \times 2 \times 81 \times 5$

c)  $2\frac{1}{2} + 1\frac{1}{3} + 4\frac{1}{4} + 1\frac{1}{4}$

d)  $\$5.29 + \$4.98 + \$5.02$

3. Compute each of the following without using the calculator. [2.2, 2.3, 3.1]

a)  $6 - (-3) - 2$

b)  $\frac{-6}{3} + 2$

c)  $-8 - 2(-4) + 5(-7)$

d)  $\frac{1}{9}(-27)\frac{2}{3}$

e)  $3.45 - 2.001 + 1.093$

f)  $\frac{-2}{3} \div \left(\frac{-4}{3}\right)$

g)  $-1.7 \div 5.1$

4. Simplify with the distributive property. [2.3]

$$2(3x + 9y) - xy(y - xy + x^2)$$

5. Simplify the following expressions. [2.3, 2.4]

a)  $(3x^3y)(-2x^2y^3)$

$$b) \frac{-8a^2b^3}{2a^5b}$$

$$c) \left( \frac{-1r^2s}{2} \right)^3$$

$$d) \frac{x^4}{x^9}$$

$$e) (0.02x^2)(0.01x^3)$$

$$f) -2(3ab)^3(5b)^2$$

$$g) \frac{-3x^3}{(9x)^2}$$

$$h) (-3ab^2)^2$$

6. Simplify without using a calculator. [2.1, 2.4]

$$a) -2 + \sqrt{100} - 14$$

$$b) 7 - 5(4 - x)$$

$$c) |5 - 8| - |3 - 6|$$

$$d) \frac{-2 + \sqrt{100}}{4}$$

$$e) \sqrt{(3 - (-9))^2 + (-3 - 2)^2}$$

7-8. Complete the following tables. [2.2, 2.4]

7.

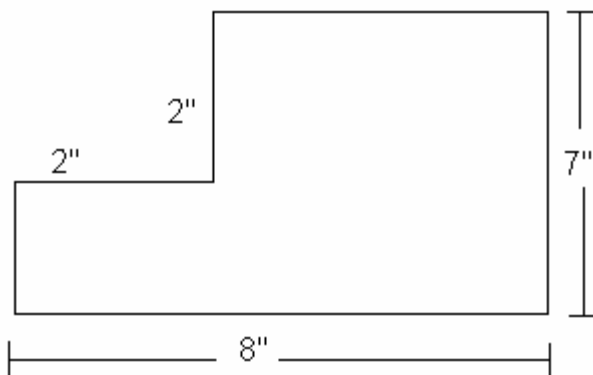
a	$\frac{-2a}{3}$
2	—
-6	—
—	-6
3	—

8.

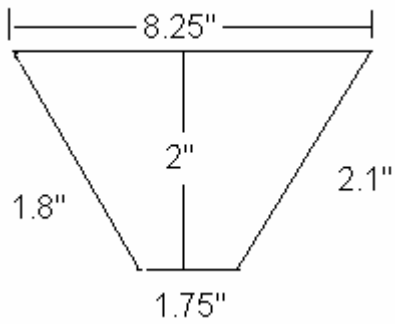
q	$\frac{2-q}{q-1}$	$\frac{q-5}{3-q}$
3		
2		
1		
0		
-1		
-2		
-3		

9. Find the perimeter and the area of the following figures. [2.5]

a)



b)



Not drawn to scale

c) Find the area of the shaded region.



10. Complete the table [2.5, 2.6]

Words	Inequalities
0 to 50	$1750 \leq x$
_____	_____
q is less than or equal to -4	_____
Over 150 but not over 350	_____
	$-5 < x \leq -3$
$x \leq -4$	_____

11. Decide whether each of the following statements is true or false. [2.2, 2.3, 2.6]

a)  $5-3 = 3-5$

b)  $|7-3| = |3-7|$

c) if  $x+2 > 5$  then  $x > 5$

12. Translate the following word phrases into expressions. [3.1, 3.2, 3.3]

a. The difference between 5 and twice the input.

b. The quotient of 8 and the input, decreased by 3.

c. The product of 3 and one-eighth of the input.

d. Half times the input, less 7.

e. The distance a car travels in six hours if it goes  $x$  m.p.h.

f. The output is the product of negative three and four more than the input.

13. Solve for  $x$  using any method. [3.1, 3.2, 3.3]

a)  $-3(x-2) = 0$

b)  $7x + 2 = 3(1+x) + 2$

c)  $-5(1-x) = 6+3x$

14a) Rachael bought a dress whose original price was  $q$  dollars but was discounted 10%.  
What was the discounted price? [3.2]

b) Suppose  $q = \$125.00$ , solve the equation above.

15a) A car was purchased for  $p$  dollars with a 20% down payment. How much was the down payment? [3.2]

b) If  $p = \$13,000$ , solve the equation above.

16. Tracy traveled at an average speed of 55 miles per hour on a 200- mile trip to visit her friend. [3.2]

a) Express the distance Tracy traveled.

b) Find the time Tracy takes to get to her destination.

Answers:

1. Since \$19.98 is almost \$20, first estimate the total as 7 times \$20 = \$140. Then find the exact answer by subtracting 7 times \$0.02 from \$140. Answer: \$139.86

2a) 18; b) 270; c)  $9\frac{1}{3}$ ; d) \$15.29

3a) 7; b) 0; c) -35; d) -2; e) 2.542; f)  $\frac{1}{2}$ ; g)  $-\frac{1}{3}$

4)  $6x + 18y - xy^2 + x^2y^2 - x^3y$

5a)  $-6x^5y^4$ ; b)  $-4\frac{b^2}{a^3}$ ; c)  $-\frac{1}{8}r^6s^3$ ; d)  $\frac{1}{x^5}$ ; e)  $0.0002x^5$ ; f)  $-1350a^3b^5$

g)  $\frac{-x}{27}$

h)  $9a^2b^4$

6a) -6; b)  $5x-13$ ; c) 0; d) 2; e) 13;

a	$\frac{-2a}{3}$
2	$\frac{-4}{3}$
-6	4
9	-6
3	$\frac{-2}{3}$

7)

q	$\frac{2-q}{q-1}$	$\frac{q-5}{3-q}$
3	$\frac{-1}{2}$	U.D.
2	0	-3
1	U.D.	-2
0	-2	$\frac{-5}{3}$
-1	$\frac{-3}{2}$	$\frac{-3}{2}$
-2	$\frac{-4}{3}$	$\frac{-7}{5}$
-3	$\frac{-5}{4}$	$\frac{-4}{3}$

8)

9a) Perimeter: 30", Area : 52sq " ; b) Perimeter: 13.9", Area: 10sq " c)  $(2x)^2 - \pi x^2$

Words	Inequalities
0 to 50	$0 \leq x \leq 50$
<u>1750 or greater</u>	$1750 \leq x$
q is less than or equal to -4	$q \leq -4$
Over 150 but not over 350	$150 < x \leq 350$
x is greater than -5 and less than or equal to -3	$-5 < x \leq -3$
<u><math>x \leq -4</math></u>	x is less than or equal to -4

10)

11) a) False; b) True; c) False -> Let  $x = 4$  then by substitution if  $4+2 > 5$  then  $4 > 5$ . False

12a)  $5-2x$ ; b)  $\frac{8}{r}-3$ ; c)  $\frac{3}{8}w$ ; d)  $\frac{1}{2}m-7$ ; e)  $6x$ ; f)  $-3(x+4)$

13a)  $x = 2$ ; b)  $x = 0.75$ ; c)  $x = 5.5$ .

14a) Original price – discounted

$\$q.00 - 0.10(\$q.00) \rightarrow \text{Answer: } \$0.90q$

b)  $\$0.90(125) = \$112.50 \rightarrow \text{Answer: } \$112.50$

15a)  $y = 20\%p$ ; b)  $y = 0.20(13,000) = \$2600.00$

16a) Distance = Rate (Time) ->  $200 = 55T$ ; b)  $55t = 200 \rightarrow t = 3.636 \text{ hrs.}$