

MATH 20 TEST 2 First and Last Name: \_\_\_\_\_

CHAPTERS 3–4

FALL 2011

**DIRECTIONS:** No calculators may be used. All cell phones must be turned off and put inside your bag. Be sure to show your work. Depending on the problem, you may receive no credit if no work is shown even if the answer is correct. If there is a blank, write your answer in the blank, otherwise **circle your answer**. Keep this test to study from for the final exam.

**EVALUATION**

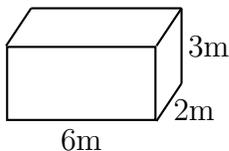
Evaluate the expressions in problems 1 and 2 by letting  $x = 7$  and  $y = -4$ . Put your answer in the blank behind the problem.

1)  $12x + 9y$  \_\_\_\_\_

2)  $2xy - (10 - y)$  \_\_\_\_\_

3) Evaluate  $\frac{x^2 - 3x + 8}{4 - x}$  for  $x = -2$ . \_\_\_\_\_

**GEOMETRY** Find the volume and surface area of the box below. Put your answer in the appropriate blank at the bottom of the page. Be sure to label your answers with correct units.



volume=\_\_\_\_\_

surface area=\_\_\_\_\_

**FACTORS** Put your answers in the blanks for each problem.

5) List ALL factors of 42

6) Write 360 as a product of prime factors.

\_\_\_\_\_

\_\_\_\_\_

8) Find the GCF of 35 and 42

\_\_\_\_\_

9) Find the GCF of  $12x^3y^2z^4$  and  $18xy^4z^3$

\_\_\_\_\_

**POLYNOMIALS** Perform the operations required on the polynomials in problems 10 - 15. Be sure to look carefully to see if you are being asked to add, subtract, multiply or divide. Put your answer in the blank for each problem.

10)  $(3x - 2) + (5x + 7)$

\_\_\_\_\_

11)  $(4x^2 - 5x + 12) - (-10x^2 + 3x - 10)$

\_\_\_\_\_

12)  $(3x - 2)(x + 5)$

\_\_\_\_\_

13)  $(15x - 4) - (10x - 12) + (2x - 7)$

\_\_\_\_\_

14)  $-3x^2(-7x^2 + 3x - 4)$

\_\_\_\_\_

15)  $(x + 3)(2x^2 + 5x + 3)$

\_\_\_\_\_

**EQUATIONS** Solve the equations in problems 16 - 18. Put your answer in the blank.

16)  $4x - 2 = 5x + 12$

\_\_\_\_\_

17)  $3(2x - 5) = 4x - 37$

\_\_\_\_\_

18)  $4 - 2(3 - x) = x + 7$

\_\_\_\_\_

## APPLICATIONS

19) A mischievous child builds a water balloon launcher in his treehouse and proceeds to shoot water balloons at all the innocent people in his neighborhood. The height of one of these water balloons ( $h$ , in feet) may be modeled as a function of time ( $t$ , in seconds) by the formula  $h = -16t^2 + 60t + 12$ . How far above the ground would one of these water balloons be three seconds after launch? Be sure to label your answer with correct units.

height=\_\_\_\_\_

20) A woodcarver makes  $m$  marionettes and  $n$  nutcrackers. The cost of making these items is  $C = 50 + 13m + 8n$ . The revenue made from selling them is  $R = 27m + 20n$ .

a) Write a polynomial that models the woodcarvers net profit.

b) One month the woodcarver made 10 marionettes and 7 nutcrackers. How much money did the woodcarver make?

Net=\_\_\_\_\_

Money Made=\_\_\_\_\_