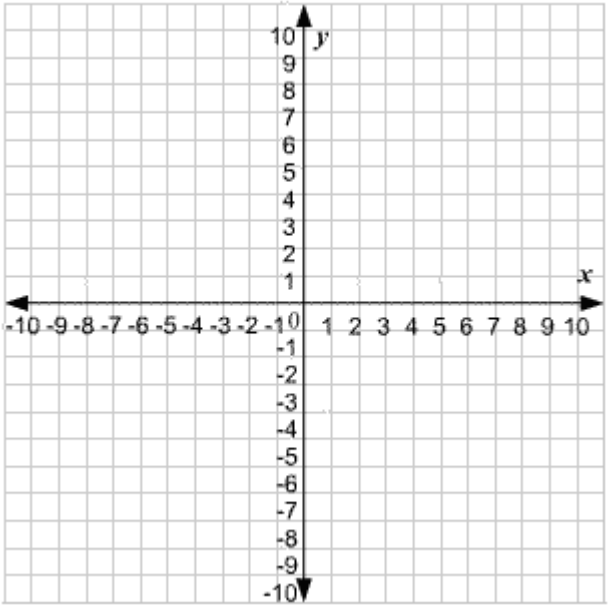
Name _____

MATH 124
TEST 1 v1
Sections 1.1 – 1.3, 1.5 – 1.7

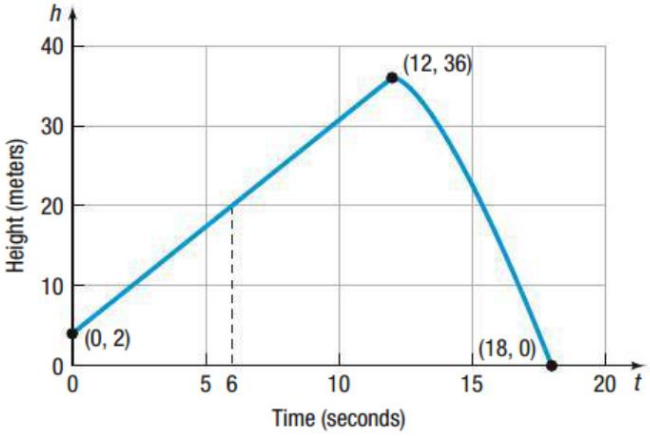
DIRECTIONS: SHOW WORK WHENEVER POSSIBLE, EVEN IF IT'S MULTIPLE CHOICE! Partial credit may be awarded for partially correct answers in which you show the correct steps. Points may be deducted for missing or nonsensical work. Good luck!

1. Fill in the table and use the ordered pairs to graph $y = 8 - 2x^2$.

x	$y = 8 - 2x^2$	(x,y)
-2		
-1		
0		
1		
2		



2. **Discus Throw** The graph below shows the height h, in meter of a discus t seconds after it is thrown.



(a) What is the height of the discus after 6 seconds?

(b) When does the discus reach its maximum height? What is the maximum height?

(c) Identify and interpret the intercepts.

3. Solve $\frac{2}{3}p = \frac{1}{2}p - \frac{1}{3}$

4. Solve the following rational equation. Check your answer(s). Express answer(s) as simplified fractions.

$$\frac{x}{x-2} + 3 = \frac{2}{x-2}$$

5. Solve for t:

$v = -gt + v_0$

6. Judy and Tom agree to share the cost of an $18 pizza based on how much each ate. If Tom ate 2/3 the amount that Judy ate, how much should each pay?

7. Solve by factoring.

$$\frac{5}{x+4} = 4 + \frac{3}{x-2}$$

8. Solve using the square root method.

$$\left(\frac{1}{3}h + 4\right)^2 = 16$$

9. Solve using any method.

$2x^2 – 3x – 1 = 0$

10. Use the discriminant to identify how many, and what kind of, solutions the quadratic equation has. (Do not solve.)

$25x^2 – 20x + 4 = 0$

11. Find the dimensions of a rectangle whose perimeter is 26 meters and whose area is 40 square meters.

12. Find the real solutions of the following equation. Check your answer(s).

$\sqrt{3(x+10)} - 4 = x$

13. Solve $(5x - 2)^{1/3} = 2$

14. Solve $3(1 - y)^2 + 5(1 - y) + 2 = 0$

15. Solve $| 3x + 1 | = 2$

16. Solve $4 - | 2x | = 3$

17. A bank loaned out $18,000, part of it at the rate of 8% per year and the rest at the rate of 18% per year. If the interest received totaled $1500, how much was loaned at 8% ?

18. Working by himself, Joe can complete a school project in 4 hours. Working by herself, Natalie can complete the same project in 3 hours. How long will it take them to complete the school project if they work together?

19. Solve. Express your answer using interval notation.

$3 - 5x \leq 18$

20. Solve. Express your answer using interval notation.

$| 2u + 5 | \leq 7$

21. Select one of the following problems. ONLY DO ONE.

A. An open box is to be constructed from a square piece of sheet metal by removing a square with sides of length 1 foot from each corner and turning up the edges. If the box is to hold 16 cubic feet, what should be the dimensions of the sheet metal?

B. A candy store sells boxes of candy containing caramels and cremes. Each box sells for $12.50 and holds 30 pieces of candy (all pieces are the same size.) If the caramels cost $0.25 to produce and the cremes cost $0.45 to produce, how many of each should be in a box to yield a profit of $3?

C. A motorboat maintains a constant speed of 10 mph relative to the water. The boat makes a trip upstream to a certain point in 40 minutes, the return trip takes 10 minutes. What is the speed of the current?

Circle which problem: A B C