



**Special Instructions:**

- The use of a basic *non-scientific* calculator is acceptable.
  - All questions are not of equal length and difficulty; also, they are in no particular order. Do not check your answers until you have completed the entire test.
  - Time allowed: 1 Hour maximum.
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1.  $6 \div 4 \times 3 + 8 \div 2 - 4 \times 2 = ?$

2.  $\frac{1000}{1 + 0.12 \times 60 / 365} = ?$

3. a.  $1000 (1 + 6\%)^3 = ?$

b. Solve for r:  $(1 + r)^2 = 1.1025$

4. Simplify  $a - 2(a + b) + a(3 - b) + b(a - 6)$

5. A student hoped to obtain at least 65% on each of four tests. He obtained 65%, 50%, 70%, 60%. Which of these scores satisfied his hope?

6. Solve for y:

$$2(400.81 - y) = 3.3745y - 932.62$$

7.  $140\%$  of 11 000 = ?

8. Write  $8\frac{1}{2}\%$  as a decimal.

9. Write 0.115 as a %.

10. Write the equation in terms of  $t$ ; that is, solve for  $t$  in:

$$S = P(1 + rt)$$

11. In Question 10, suppose that  $P$  represents Principal (in \$),  $S$  represents the sum of Principal and Interest (in \$),  $r$  represents the rate of simple interest per year and  $t$  represents the time that the principal is invested (in years). Find how many years it takes for \$200 to accumulate \$60 in interest at an interest rate of 10% per year.

12. Solve for the value of  $b$  in:

$$\frac{4}{b} = \frac{5}{3}$$

13. Solve for the values of  $E$  and  $T$  to satisfy the following system of simultaneous equations:

$$\begin{aligned} E - 2T &= -4 \\ 2E + T &= 7 \end{aligned}$$

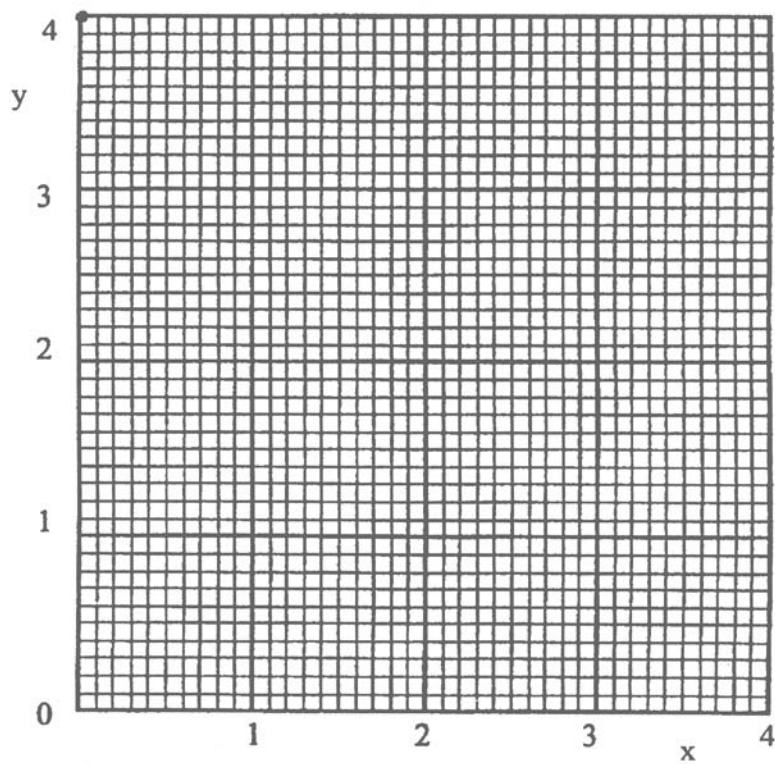
14. The selling price ( $S$ ) of an item is calculated by taking its cost price ( $C$ ) and adding a markup ( $M$ ) which is equivalent to 40% of the cost price. Write an equation which expresses  $S$  in terms of:

- $M$  and  $C$
- $C$  only
- If an item sold for \$56, what was its cost?

15. The daily rental charge for an automobile is \$ $d$ . This includes 100 “free” kilometers per day; however, the renter is charged \$ $k$  per kilometer for travel in excess of the 100 kilometers per day. Write a formula for the dollar cost ( $C$ ) of an auto rental of  $n$  days where the renter travels  $x$  kilometers during the rental period. (Assume that the renter *always* travels more than 100 km/day on an average.)

16. The renter in Question 15 above is being charged \$29.00 per day for a sub-compact model and \$.20 per kilometer for distances traveled in excess of 100 kilometers per day. How much will she be charged if she rented this particular model for 7 days and actually traveled 1450 kilometers in total?

17. If the Canadian dollar is worth \$0.75 U.S., how much is one hundred dollars U.S. worth in Canadian dollars?
18. What is a person's gross pay if his net pay is \$630.00 after deducting 30% of his gross pay for taxes?
19. How much Mocca coffee, costing \$10.00 per kilogram, must be blended with how much Colombian coffee, costing \$19.00 per kilogram, to produce a mixture of 100 kilograms of coffee, with an overall average cost of \$15.40 per kilogram?
20. Plot the equation  $3y = 12 - 6x$  on the graph below over a range of  $x$  values from 0 to 2.



21. What is the slope of the line described in Question 20?
22. How would the answers to Questions 20 and 21 be different if the equation  $y = 4 - 2x$  were used?

23. A rectangular field is 1,000 cm long and 750 cm wide. Find:
- its perimeter in meters.
  - its area in square meters.

Use a table below for Questions 24 and 25. (The values are hypothetical.)

1 all-beef patty	+45 calories
1 slice bread	+75 calories

running (1 km)	-90 calories
swimming (1 km)	-70 calories

24. Find the calories gained or lost if a person eats 2 all-beef patties between 4 slices of bread, and then runs for  $3\frac{1}{2}$  kilometers and swims for 1.2 kilometers.
25. A person eats 2 all-beef patties between 2 slices of bread, and then runs and swims an equal distance to exactly “burn off” the calories. How many kilometers did he/she run?
26. If an automobile is accelerating at a constant rate, its average velocity  $V_a$  is one-half the sum of its initial velocity  $V_i$ , and its final velocity  $V_f$ . Write the algebraic formula for the average velocity, given the initial velocity and the final velocity.

## Answers

1. 0.5
2. 980.66 (rounded)
3. a. 1191  
b. 0.05
4.  $2(a - 4b)$  or  $2a - 8b$
5. 65% and 70%
6. 322.68 (rounded)
7. \$15 400 or \$15,400
8. 0.085
9. 11.5% or  $11\frac{1}{2}\%$
10.  $t = (S - P) / Pr$  or  $\frac{S - P}{Pr}$
11. 3 years
12.  $12/5$  or 2.4
13.  $E = 2, T = 3$
14. a.  $S = C + M$   
b.  $S = 1.40 C$   
c.  $C = \$40$
15.  $C = nd + k(x - 100 n)$
16.  $C = \$353.00$
17. \$133.33
18. \$900.00
19. 40 Kg of Mocca  
60 Kg of Colombian
20. See graph
21. -2
22. No difference
23. a. 35 meters  
b. 75 square meters
24. -9 calories (lost 9 calories)
25. 1.5 kilometers
26.  $V_a = (V_i + V_f) / 2$  or  $V_a = \frac{V_i + V_f}{2}$

