



GMAT Practice Worksheet: Non-Standard Math Techniques

Objective: The purpose of this worksheet is to give you practice with two crucial non-standard GMAT math techniques:

1. **Working Backwards** (see video: "Problem Solving - Overview and Non-Standard Math Techniques")
2. **Making Up Numbers** (see video: "Problem Solving - Overview and Non-Standard Math Techniques")

Directions: Decide for each problem which technique is most appropriate. Take as much time as you need to apply the technique and solve the problem. Do not be concerned with time. Learning the techniques is what is important.

1. Miguel is 180 centimeters tall. At 2:00 p.m. one day, his shadow is 60 centimeters long, and the shadow of a nearby fence post is t centimeters long. In terms of t , what is the height, in centimeters, of the fence post?
 - a. $t + 120$
 - b. $\frac{t}{3}$
 - c. $3t$
 - d. $3\sqrt{t}$
 - e. $\left(\frac{t}{3}\right)^2$
2. Troy bought a bag of 20 marbles for \$2.00, a bag of 50 marbles for \$4.00, and a bag of 100 marbles. If the average (arithmetic mean) cost of the marbles in all three bags was exactly \$0.08 each, what was the price of the bag of 100 marbles?
 - a. \$7.00
 - b. \$7.20
 - c. \$7.40
 - d. \$7.60
 - e. \$7.80
3. If k is divisible by 2, 3, and 15, which of the following is also divisible by these numbers?
 - a. $k + 5$
 - b. $k + 15$
 - c. $k + 20$
 - d. $k + 30$
 - e. $k + 45$

4. If a train travels $r + 2$ miles in h hours, which of the following represents the number of miles the train travels in 1 hour and 30 minutes?
- a. $\frac{3r + 6}{2h}$
 - b. $\frac{3r}{h + 2}$
 - c. $\frac{r + 2}{h + 3}$
 - d. $\frac{r}{h + 6}$
 - e. $\frac{3}{2}(r + 2)$
5. Jason uses two different mixtures of windshield washer fluid for his car. In summer the mixture is one part washer fluid to three parts water; in winter the mixture is two parts washer fluid to one part water. How many ounces of washer fluid should Jason add to 24 ounces of the summer mixture in order to produce the winter mixture?
- a. 3
 - b. 12
 - c. 30
 - d. 36
 - e. 48
6. If $a = x - 3$, what does $x^2 - 9$ equal, in terms of a ?
- a. $(a - 3)^2$
 - b. $(a + 3)^2$
 - c. $a(a - 3)$
 - d. $a(a + 3)$
 - e. $a(a + 6)$
7. If the positive number m is 125 percent of p , and if p is 60 percent of k , then m is what percent of k ?
- a. 48%
 - b. 65%
 - c. 75%
 - d. 85%
 - e. 135%

8. If the average (arithmetic mean) of two numbers is 24 and the smaller number is one-third of the larger number, what is the smaller number?
- a. 8
 - b. 12
 - c. 15
 - d. 18
 - e. 24
9. Alice bought m pens for n dollars each, and Ben bought n pens for m dollars each. Which of the following is the average price per pen, in dollars, for all the pens that Alice and Ben bought?
- a. $\frac{mn}{m+n}$
 - b. $\frac{2mn}{m+n}$
 - c. $\frac{m+n}{m \cdot n}$
 - d. $\frac{2(m+n)}{m \cdot n}$
 - e. $m \cdot n$
10. If half the people in a room leave at the end of every five-minute interval and at the end of twenty minutes the next to last person leaves, how many people were in the room to start with? (Assume that no one enters the room once the process begins.)
- a. 32
 - b. 28
 - c. 16
 - d. 12
 - e. 8
11. If $3 < x < 7$ and $4 < y < 7$, which of the following best describes the range of values of $x - y$?
- a. $-4 < x - y < 3$
 - b. $0 < x - y < 4$
 - c. $3 < x - y < 4$
 - d. $3 < x - y < 7$
 - e. $4 < x - y < 7$

12. The sum of the digits of a three-digit number is 12. If the hundreds digit is 3 times the tens digit and the tens digit is $\frac{1}{2}$ the units digit, what is the tens digit of the number?

- a. 1
- b. 2
- c. 4
- d. 6
- e. 9

13. The length of rectangle S is 20 percent longer than the length of rectangle R , and the width of rectangle S is 20 percent shorter than the width of rectangle R . The area of rectangle S is

- a. 20% greater than the area of rectangle R
- b. 4% greater than the area of rectangle R
- c. equal to the area of rectangle R
- d. 4% less than the area of rectangle R
- e. 20% less than the area of rectangle R

14. The price of 10 pounds of apples is d dollars. If the apples weigh an average of 1 pound for every 6 apples, which of the following is the average price, in cents, of a dozen such apples?

- a. $20d$
- b. $\frac{50d}{3}$
- c. $5d$
- d. $\frac{5d}{3}$
- e. $\frac{d}{20}$

15. If the length and width of rectangle A are 10 percent less and 30 percent less, respectively, than the length and width of rectangle B , the area of A is equal to what percent of the area of B ?

- a. 63%
- b. 60%
- c. 40%
- d. 6%
- e. 3%

GMAT Non-Standard Math Techniques Worksheet: **ANSWER KEY**

Note: Video answer explanations for each question on this worksheet can be found under the “Worksheets” heading on your back-end member page. If you still have questions about certain problems after watching the solution videos, contact your instructor or send an e-mail to info@dominatethegmat.com.

1. **C**
2. **D**
3. **D**
4. **A**
5. **C**
6. **E**
7. **C**
8. **B**
9. **B**
10. **C**
11. **A**
12. **B**
13. **D**
14. **A**
15. **A**