Course: SAT ACT Prep **Lesson Number:** **2**

Subject: Mathematical Reasoning **Reference Number:** **1001-7**

Topic: Arithmetic

Subtopic: Solving with Substitution & Conceptually *https://youtube.com/c/MrMattTheTutor*

Document: Quick Drill A Resource

1) If M and N are positive prime integers greater than 2 and Q is an even integer, which of the following statements is/are true?

   I. $MN + 2MN$ is an odd integer

   II. $3M^2 + 2N^2$ is an even integer

   III. $5Q - 3N^3$ is an odd integer

   a) Statements I and II only

   b) Statements I and III only

   c) Statements II and III only

   d) Statements I, II, and III

2) If M and N are positive prime integers greater than 2 and Q is an even integer, which of the following statements is/are true?

I. $MNQ + 2NQ$ is an even integer

II. $Q^2M^2 + 2QN^2$ is an even integer

III. $5MQ - 4MN^3$ is an even integer

a) Statements I and II only

b) Statements I and III only

c) Statements II and III only

d) Statements I, II, and III

3) If M and N are positive prime integers greater than 2 and Q is an even integer, which of the following statements is/are true?

I. $(Q - M)^3 + (35MN)^2$ is an even integer

II. $(37M + 29Q)^2 + 17N^2$ is an even integer

III. $(85Q)^2 - (93N)^3$ is an even integer

a) Statements I and II only

b) Statements I and III only

c) Statements II and III only

d) Statements I, II, and III

4) If M and N are integers less than zero and Q is an integer greater than zero, which of the following statements is/are true?

I. $(MNQ)^2 \times (2MQ)^3$ is a positive integer

II. $(-3MQ)^3 \div (5NM)^2$ is a positive integer

III. $(-2MN)^3 \times (-3MNQ)^3$ is a positive integer

a) Statements I and II only

b) Statements I and III only

c) Statements II and III only

d) Statements I, II, and III

5) If M and N are integers less than zero and Q is an integer greater than zero, which of the following statements is/are true?

I. $(MN)^3 \times (-3MQ)^2$ is a positive integer

II. $(3MN)^2 \div (5NQM)^3$ is a positive integer

III. $(-2MN)^2 \times (-3MNQ)^3$ is a positive integer

a) Statements I and II only

b) Statements I and III only

c) Statements II and III only

d) Statements I, II, and III

6) If M and N are integers less than zero and Q is an integer greater than zero, which of the following statements is/are true?

I. $(-NQ)^2 \times (-2MNQ)^3$ is a negative integer

II. $(-3MN)^3 \div (-5QM)^2$ is a negative integer

III. $(2MNQ)^3 \times (-3NQ)^3$ is a negative integer

a) Statements I and II only

b) Statements I and III only

c) Statements II and III only

d) Statements I, II, and III