

**Mathematics Attitudes, Skills, & Knowledge Survey  
(MASKS)  
Level 2 Form A**

Directions to Students:

Do not open this booklet until you are told to do so. Please respond to the following items by marking the best answer on your answer sheet using a #2 pencil. Please do not write on this survey. Scratch paper will be provided on request. If you do not understand what is being asked in an item, please ask the survey administrator for clarification.

Calculators are not permitted on this exam.

***Please Do Not Write On This Test Booklet***



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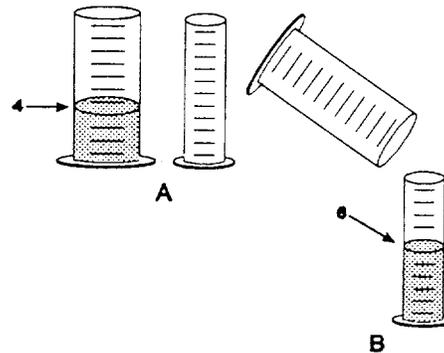
1. Which best describes your race or ethnic background?
  - A. American Indian
  - B. Asian/Pacific Islander
  - C. Hispanic
  - D. Black
  - E. Other
  
2. What is the highest level of education your mother obtained?
  - A. did not finish high school
  - B. high school graduate
  - C. some education after high school
  - D. college graduate
  - E. I don't know
  
3. What is the highest level of education your father obtained?
  - A. did not finish high school
  - B. high school graduate
  - C. some education after high school
  - D. college graduate
  - E. I don't know

Use the following key to indicate whether you agree/disagree with items 4 – 10.

A. strongly agree    B. agree    C. not sure    D. disagree    E. strongly disagree

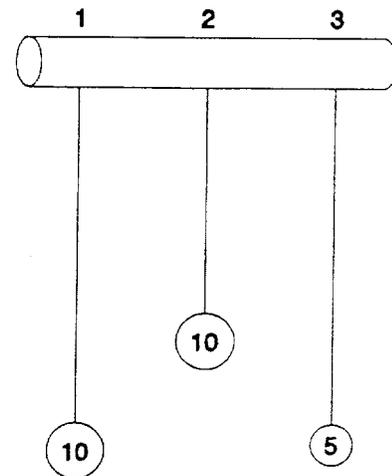
4. I like math.
  
5. Being successful in math requires only being good with numbers.
  
6. There can be more than one way to solve a math problem.
  
7. Solving a difficult math problem does not involve being creative.
  
8. Formulas represent relationships between variables.
  
9. Math rules must be taken by faith.
  
10. Graphing real world data is useful for making predictions.

11. To the right are drawings of a wide and a narrow cylinder. The cylinders have equally spaced marks on them. Water is poured into the wide cylinder up to the 4th mark (see A). This water rises to the 6th mark when poured into the narrow cylinder (see B).



Both cylinders are emptied, and water is poured into the narrow cylinder up to the 11th mark. How high would this water rise if it were poured into the empty wide cylinder?

- A. to about  $7 \frac{1}{2}$   
 B. to about 9  
 C. to about 8  
 D. to about  $7 \frac{1}{3}$   
 E. none of these answers is correct
12. because
- A. the ratios must stay the same.  
 B. one must actually pour the water and observe to find out.  
 C. the answer can not be determined with the information given.  
 D. it was 2 less before so it will be 2 less again.  
 E. you subtract 2 from the wide for every 3 from the narrow.
13. At the right are drawings of three strings hanging from a bar. The three strings have metal weights attached to their ends. String 1 and String 3 are the same length. String 2 is shorter. A 10 unit weight is attached to the end of String 1. A 10 unit weight is also attached to the end of String 2. A 5 unit weight is attached to the end of String 3. The strings (and attached weights) can be swung back and forth and the time it takes to make a swing can be timed.



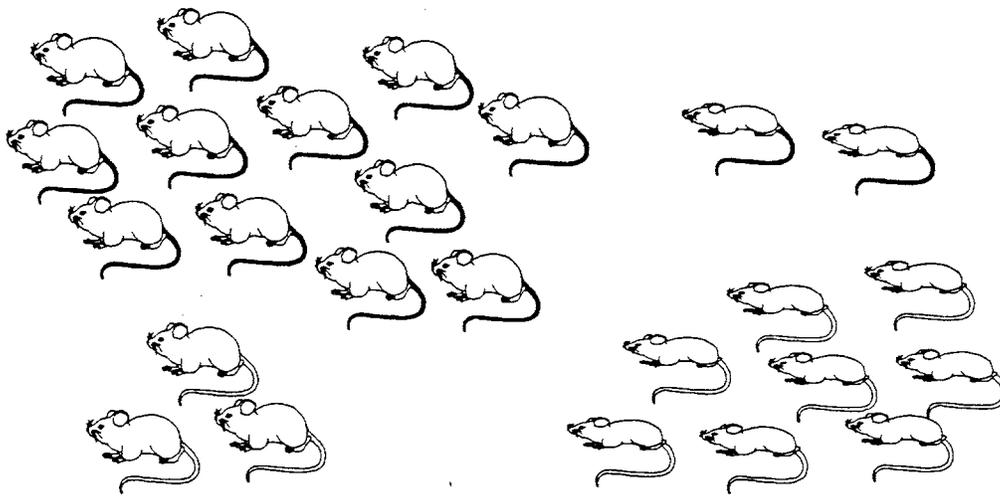
Suppose you want to find out whether the length of the string has an effect on the time it takes to swing back and forth. Which strings would you use to find out?

- A. only one string  
 B. all three strings  
 C. 2 and 3  
 D. 1 and 3  
 E. 1 and 2

14. because

- A. you must use the longest strings.
- B. you must compare strings with both light and heavy weights.
- C. only the lengths differ.
- D. to make all possible comparisons.
- E. the weights differ.

15. Farmer Brown was observing the mice that live in his field. He discovered that all of them were either fat or thin. Also, all of them had either black tails or white tails. This made him wonder if there might be a link between the size of the mice and the color of their tails. So he captured all of the mice in one part of his field and observed them. Below are the mice that he captured.



Do you think there is a link between the size of the mice and the color of their tails?

- A. appears to be a link
- B. appears not to be a link
- C. can not make a reasonable guess

16. because

- A. there are some of each kind of mouse.
- B. there may be a genetic link between mouse size and tail color.
- C. there were not enough mice captured.
- D. most of the fat mice have black tails while most of the thin mice have white tails.
- E. as the mice grew fatter, their tails became darker.

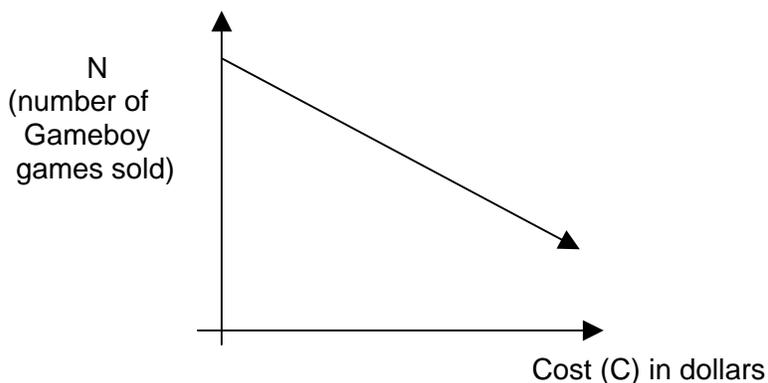
17. The table below shows the times and distances that a 2000 Corvette covered during the first 4 seconds after a stoplight.

Time (t) in seconds	Distance (d) in feet
0	0
1	25
2	98
3	198
4	350

Find the average rate of change of the car from 1 to 3 seconds.

- A. 66 feet
- B.  $66 \frac{\text{feet}}{\text{sec}}$
- C. 86.5 feet
- D.  $86.5 \frac{\text{feet}}{\text{sec}}$
- E.  $198 \frac{\text{feet}}{\text{sec}}$
18. A school club is planning a bus trip to the wildlife park. A bus which will hold up to 45 people will cost 600 centros (units of money) and admission tickets cost 30 centros each. If the cost of the trip, including bus and admission ticket, is set at 50 centros per person, what is the minimum number of people who must participate to insure that these costs are covered? (TIMMS population 3 A 5)
- A. 12
- B. 20
- C. 30
- D. 45
19. In a vineyard there are 210 rows of vines. Each row is 192 m long and plants are planted 4 m apart. On average, each plant produces 9 kg of grapes each season. The total amount of grapes produced by the vineyard each season is closest to (TIMMS pop. 3 D8)
- A. 10000 kg
- B. 100000 kg
- C. 400000 kg
- D. 1600000 kg
20. A store is having a 20% off sale. The normal price of a stereo system is \$1250. What is the price of the stereo system after the 20% discount is applied? (TIMMS pop. 3 D9)
- A. \$1000
- B. \$1050
- C. \$1230
- D. \$1500

21. A 45,000 liter water tank is to be filled at the rate of 220 liters per minute. Estimate to the nearest half an hour how long it will take to fill the tank. (TIMMS pop. 3 D6)
- A. 4 hours
  - B. 3.5 hours
  - C. 3 hours
  - D. 2.5 hours
22. Brighto soap powder is packed in cube-shaped cartons. A carton measures 10 cm on each side. The company decides to increase the length of each edge of the carton by 10%. How much does the volume increase? (TIMMS pop. 3 D12)
- A.  $10 \text{ cm}^3$
  - B.  $21 \text{ cm}^3$
  - C.  $100 \text{ cm}^3$
  - D.  $331 \text{ cm}^3$
23. If  $xy = 1$  and  $x > 0$ , which of the following statements is true? (TIMMS pop. 3 K1)
- A. When  $x$  is greater than 1,  $y$  is negative.
  - B. When  $x$  is greater than 1,  $y$  is greater than 1.
  - C. When  $x$  is less than 1,  $y$  is less than 1.
  - D. As  $x$  increases,  $y$  increases.
  - E. As  $x$  increases,  $y$  decreases.
24. The number of bacteria in a colony was growing exponentially. At 1 pm yesterday the number of bacteria was 1000 and at 3 pm yesterday it was 4000. How many bacteria were there at 6 pm yesterday? (TIMMS pop. 3 K13)
- A. 7000
  - B. 10000
  - C. 16000
  - D. 32000
25. What does the slope of the line represent in this problem if  $C$  is the cost in dollars and  $N$  is the number of Gameboy handheld games sold?



- A. Cost (in dollars)
- B. Number of Gameboy games sold
- C. Decreased cost (in dollars) per number of Gameboy games sold
- D. Number of Gameboy games sold per dollar increase