California Basic Educational Skills Test™

CBEST® Practice Test

Mathematics

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INTRODUCTION

This document is a paper-based version of the CBEST® Computer-Administered Practice Test for the Mathematics section.

This practice test contains a full-length sample test consisting of 50 multiple-choice questions, an answer sheet, and a skill area worksheet for each Mathematics skill area.

TEST DIRECTIONS

Each question in the Mathematics Section of the practice test is a multiple-choice question with five answer choices. Read each question carefully and choose the ONE best answer. Record each answer on the answer sheet provided.

You may work on the multiple-choice questions in any order that you choose. You may wish to monitor how long it takes you to complete the practice test. When taking the actual CBEST, you will have one four-hour test session in which to complete the section(s) for which you registered.

MATHEMATICS ANSWER SHEET

Estimation, Measurement, & Statistical Principles

Question Number	Your Response
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Numerical & Graphic Relationships

Question Number	Your Response
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MULTIPLE-CHOICE QUESTIONS

1. During a semester, a student received scores of 76, 80, 83, 71, 80, and 78 on six tests. What is the student's average score for these six tests?
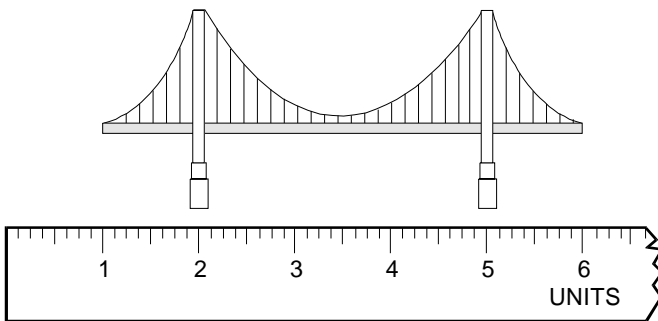
    A. 76

    B. 77

    C. 78

    D. 79

    E. 80

2. **Use the table below to answer the question that follows.**

Section	Total Number of Questions	Number of Questions Correctly Answered
Algebra	20	17
Trigonometry	15	11
Geometry	25	20

    On the three sections of a math test, a student correctly answered the number of questions shown in the table above. What percent of the questions on the entire test did the student answer correctly?

    A. 20%

    B. 48%

    C. 75%

    D. 80%

    E. 96%

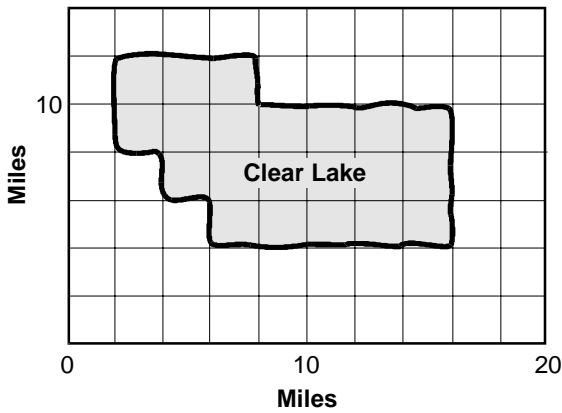3. **Use the diagram below to answer the question that follows.**

If the actual length of the bridge is 4200 feet, then what is the scale of the diagram of the bridge?

A. 1 unit = 700 feet

B. 1 unit = 763.6 feet

C. 1 unit = 840 feet

D. 1 unit = 933.3 feet

E. 1 unit = 1050 feet

4. Which of the following is the most appropriate unit for expressing the weight of a pencil?

A. pounds

B. ounces

C. quarts

D. pints

E. tons

5. Ms. Gutierrez needs to order rope for her gym class of 32 students. Each student will receive a piece of rope that is 5 feet 8 inches long. What is the total length of rope Ms. Gutierrez needs to order for her class?

   A. 106 feet 8 inches

   B. 154 feet 8 inches

   C. 160 feet 8 inches

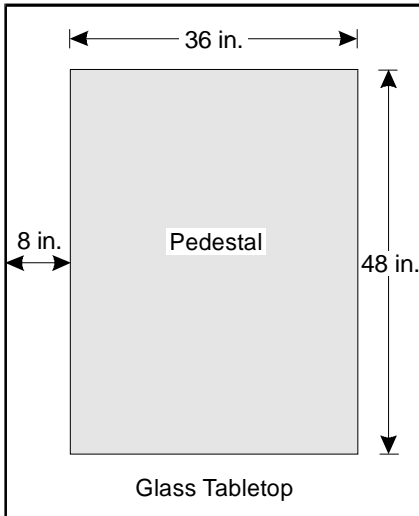   D. 181 feet 4 inches

   E. 185 feet 6 inches

6. **Use the diagram below to answer the question that follows.**

   What is the total length of Clear Lake's shoreline?

   A. 22 miles

   B. 44 miles

   C. 48 miles

   D. 56 miles

   E. 84 miles

7. **Use the diagram below to answer the question that follows.**

36 in.

8 in.   Pedestal   48 in.

Glass Tabletop

A glass tabletop is supported by a rectangular pedestal. If the tabletop is 8 inches wider than the pedestal on each side, what is the perimeter of the glass tabletop?

A. 92 inches

B. 116 inches

C. 176 inches

D. 184 inches

E. 232 inches

8. Rob uses 1 box of cat food every 5 days to feed his cats. Approximately how many boxes of cat food does he use per month?

A. 2 boxes

B. 4 boxes

C. 5 boxes

D. 6 boxes

E. 7 boxes

9. Tara can develop 2 rolls of film in about 18 minutes.
    At this rate, how long will it take her to develop 8 rolls
    of film?

    A.   42 minutes

    B.   1 hour 12 minutes

    C.   1 hour 20 minutes

    D.   1 hour 44 minutes

    E.   2 hours 24 minutes

10. Liliana has a bag of marbles. The bag contains 18 black,
    15 red, 11 blue, and 8 white marbles. Liliana randomly takes
    a red marble from the bag and leaves the marble on a table.
    What is the probability that she will next take a red or a white
    marble from the bag?

    A. $\frac{112}{2601}$

    B. $\frac{2}{17}$

    C. $\frac{11}{26}$

    D. $\frac{22}{51}$

    E. $\frac{23}{52}$

11. At a college, approximately 2 out of 5 seniors go on to attend graduate school. If there are 750 seniors at the college, how many would be expected to attend graduate school?

    A.   75 seniors

    B.   107 seniors

    C.   150 seniors

    D.   214 seniors

    E.   300 seniors

12. The Mills Library has 1,007,199 books. The Springvale Library has 907,082 books. Which of the following is the best estimate of how many more books the Mills Library has than the Springvale Library?

    A.   100,000 books

    B.   80,000 books

    C.   10,000 books

    D.   8,000 books

    E.   1,000 books

13. Which of the following is the best estimate for $4,286 \times 390$?

    A.   12,000,000

    B.   1,600,000

    C.   1,200,000

    D.   16,000

    E.   12,000

14. The lowest point on Earth is the bottom of the Mariana Trench at a depth of 35,840 feet below sea level. The highest point on Earth is the summit of Mt. Everest at a height of 29,028 feet above sea level. Which of the following is the best estimate of the distance between the lowest and highest points on Earth?

    A.   6,000 feet

    B.   7,000 feet

    C.   64,000 feet

    D.   65,000 feet

    E.   66,000 feet

15. Kim is in the tenth grade and takes a standardized science test. Use his test scores below to answer the question that follows.

Raw Score	Percentile	Stanine	Grade Equivalent
72	88	8	12.1

    Kim's test scores indicate that:

    A.   he scored as well as or better than 72 of the test takers.

    B.   28% of the test takers scored better than he did.

    C.   he would perform adequately in a twelfth grade science class.

    D.   he scored as well as or better than 88% of the test takers.

    E.   he answered 72% of the questions correctly.

16.   The expression

     $-105 + (-14) + 34$

     simplifies to which of the following?

     A. -57

     B. -75

     C. -85

     D.   143

     E.   153

17.   **Use the information below to answer the question that follows.**

Monday	Tuesday	Wednesday	Thursday	Friday
7°C	12°C	4°C	−13°C	−15°C

As part of a unit on weather, students recorded the outdoor temperature at 8:30 A.M. for five mornings. What was the difference between the week's highest and lowest morning temperatures?

     A. -3°C

     B. -1°C

     C.   8°C

     D.   22°C

     E.   27°C

18. A teacher has three packages of stickers. One package contains 56 stickers, another package contains 48 stickers, and the third package contains 58 stickers. If the teacher divides all the stickers equally among 27 students, how many stickers will each student receive?

    A.   6 stickers

    B.   9 stickers

    C.   54 stickers

    D.   81 stickers

    E.   162 stickers

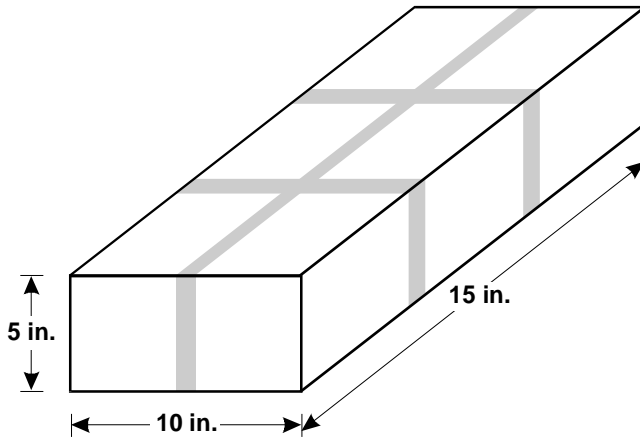19. What is the tens digit in the dividend of the problem below?

$$25 \overline{)1\ \square\ 8} \qquad 5 \quad \text{Remainder} = 23$$

    A.   2

    B.   3

    C.   4

    D.   5

    E.   7

20. Last week Mario walked $7\frac{3}{4}$ miles. This week he walked $15\frac{5}{6}$ miles. What is the difference between the distance he walked this week and the distance he walked last week?

  A. 8 miles

  B. $8\frac{1}{12}$ miles

  C. $8\frac{1}{3}$ miles

  D. 9 miles

  E. $9\frac{1}{12}$ miles

21. A sporting goods store is offering a 10% discount on in-line skates that normally cost $110.99. How much will the in-line skates cost with the discount, not including tax?

  A. $ 99.89

  B. $ 99.99

  C. $100.99

  D. $109.88

  E. $122.09

22. At the beginning of a class period, half of the students in a class go to the library. Later in the period, half of the remaining students go to the computer lab. If there are 8 students remaining in the class, how many students were originally in the class?

    A.   12 students

    B.   16 students

    C.   24 students

    D.   32 students

    E.   40 students

23. Peter works 38 hours per week and earns $7.25 per hour. His employer gives him a raise that increases his weekly gross pay to $307.80. What is the increase in Peter's weekly gross pay?

    A. $ 32.30

    B. $ 34.70

    C. $ 42.46

    D. $275.50

    E. $300.55

24. **Use the diagram below to answer the question that follows.**

Aguilar Manufacturing Company packages a product for shipping by wrapping tape around the package as shown in the diagram. An additional 10% length of tape per package is needed for overlap. What is the total length of tape needed per package?

A.   40 inches

B.   55 inches

C.   66 inches

D.   77 inches

E.   110 inches

25.   Arturo is driving at a speed of 50 miles per hour. At 2:00 he
      sees the following sign.

Applebee	**11 miles**
Beauville	**41 miles**
Caanan	**62 miles**
Denton	**98 miles**

      Arturo continues at the same speed. At 2:30 how far from
      Caanan will he be?

      A.   12 miles

      B.   16 miles

      C.   25 miles

      D.   26 miles

      E.   37 miles

26.   Keiko spent the day bird watching and counted 34 more birds
      in the morning than in the afternoon. If she counted a total of
      76 birds, how many birds did she count in the afternoon?

      A.   21 birds

      B.   40 birds

      C.   42 birds

      D.   84 birds

      E.   110 birds

27. Solve for *y*.

    $y - 2 + 3y = 10$

    A. 2

    B. 3

    C. 4

    D. 5

    E. 6

28. **Read the information below; then answer the question that follows.**

    > A refrigerator in a school cafeteria is partially filled
    > with 42 sandwiches. There are 13 turkey sandwiches,
    > 14 cheese sandwiches, and 15 egg salad sandwiches.
    > By the end of the lunch period, 21 of the sandwiches
    > have been sold.

    Which of the following facts can be determined from the
    information given above?

    A. the number of cheese sandwiches sold

    B. the cost of a turkey sandwich

    C. the total number of sandwiches that can be placed in the
        refrigerator

    D. the total dollar sales of sandwiches during the lunch
        period

    E. the number of sandwiches remaining in the refrigerator
        after the lunch period

29. **Read the problem below; then answer the question that follows.**

> Wei-Jen and Sue are going to drive cross country. To reach their destination, they plan to drive about 400 miles each day for 5 days. If gasoline costs an average of $2.00 per gallon, approximately how much money should they budget for gasoline on this trip?

Which single piece of information is necessary to solve the problem above?

A.   the number of times they will have to stop for gasoline

B.   the number of miles the car travels per gallon of gasoline

C.   the number of miles Wei-Jen will drive

D.   the total distance of their trip

E.   the number of miles the car travels per hour

30. **Read the problem below; then answer the question that follows.**

> Maria left her home at 9:00 A.M., ran 3 miles to the lake, ran around the lake twice, and then ran home along the same route for a total distance of 10 miles. What was Maria's average jogging speed?

Which single piece of additional information is required to solve this problem?

A.   the distance around the lake

B.   the time she returned home

C.   the amount of time she stopped to rest

D.   the average length of her jogging stride

E.   the amount of time it took her to run from the lake to her home

31. Antonio buys 4 notebooks for $3.50 each at a store. The next day he returns to the store and exchanges the notebooks for 3 notebooks that have gone on sale for $1.75 each. Antonio uses the following expression to calculate the amount of money he should receive back from the exchange.

$$(4 \times \$3.50) - (3 \times \$1.75)$$

Which of the following expressions could Antonio have also used?

A. $3.50 – $1.75

B. 3($3.50 – $1.75) + $3.50

C. (4 × $3.50) – $1.75

D. (4 × 3) – ($3.50 × $1.75)

E. 12 – ($3.50 + $1.75)

32. Rudi needs to calculate 14% of 50. He does so by computing it in the following way:

$$50 \times \frac{14}{100}$$

Which of the following methods could Rudi also use to determine correctly the percentage?

A. $\dfrac{14}{(100 - 50)}$

B. 50 ÷ 14

C. $\dfrac{14}{50} \times 100$

D. $\dfrac{(14 \div 50)}{100}$

E. 50 × 0.14

33. **Use the table below to answer the question that follows.**

Quiz Average	Test Average	Final Exam
83%	79%	88%

The table shows Sabra's grades for a class. For her overall average, the test average counts twice as much as the quiz average, and the final exam counts twice as much as the test average. To find her overall average, Sabra uses the following expression.

$$(83 + 79 + 79 + 88 + 88 + 88 + 88) \div 7$$

Which of the following is *another way* to find her overall average?

A. $83 + \frac{2(79)}{7} + \frac{4(88)}{7}$

B. $83 + 0.2(79) + 0.4(88)$

C. $[83 + 2(79) + 4(88)] \div 0.7$

D. $[83 + 2(79) + 4(88)] \div \frac{1}{7}$

E. $[83 + 2(79) + 4(88)] \times \frac{1}{7}$

34. **Use the chart below to answer the question that follows.**

X	*Y*
1	3
1.5	4.5
2	6
2.5	
3	9
3.5	10.5

The chart above displays a relationship between values of *X* and *Y*. Given this relationship, what would be the value of *Y* that is missing?

A. 5

B. 6.5

C. 7

D. 7.5

E. 8

35. A school district is proposing a 5% increase in the number of days in a school year. Currently there are 180 days in a school year. How long would a school year be with the proposed increase?

A. 181 days

B. 183 days

C. 185 days

D. 189 days

E. 270 days

36.   Which of the following mathematical statements is correct?

A. $3\frac{2}{3} < 3\frac{1}{3} < 2\frac{2}{3}$

B. $3\frac{2}{3} > 2\frac{2}{3} > 3\frac{1}{3}$

C. $3\frac{1}{3} > 2\frac{2}{3} > 3\frac{2}{3}$

D. $3\frac{2}{3} > 3\frac{1}{3} > 2\frac{2}{3}$

E. $3\frac{1}{3} < 3\frac{2}{3} < 2\frac{2}{3}$

37.   **Use the mathematical statement below to answer the question that follows.**

$\frac{2}{6} < \boxed{} < \frac{6}{8}$

Which of the following values when entered in the box will satisfy the statement above?

A. $\frac{1}{4}$

B. $\frac{1}{3}$

C. $\frac{1}{2}$

D. $\frac{3}{4}$

E. $\frac{9}{10}$

38. Which of the following mathematical expressions is equivalent to $\frac{bh}{2}$?

 A. $\frac{b}{2} \times \frac{h}{2}$

 B. $2\,(b \times h)$

 C. $\frac{b}{2} + \frac{h}{2}$

 D. $\frac{1}{2}\,(b \times h)$

 E. $b \times 2h$

39. Which of the following numbers is between 2,329,500 and 2,598,100?

 A.   2,249,550

 B.   2,303,600

 C.   2,327,900

 D.   2,329,333

 E.   2,589,200

40. If the value of x is between 0.0051 and 0.038, which of the following could be x?

 A.   0.0042

 B.   0.0261

 C.   0.049

 D.   0.052

 E.   0.06

41. Abby drives 18 miles round trip between home and work each day. If her daily round trip is rounded to the nearest 5 miles, which of the following is the best estimate of the total number of miles driven in 5 days?

    A.   75 miles

    B.   100 miles

    C.   125 miles

    D.   180 miles

    E.   200 miles

42. Kerri ran the same distance in four different races. Her times were 18.04 seconds, 21.39 seconds, 12.99 seconds, and 14.14 seconds. If the individual times are rounded to the nearest one-tenth of a second, what is the estimate of Kerri's total time for all four races?

    A.   66.6 seconds

    B.   66.5 seconds

    C.   66 seconds

    D.   65.5 seconds

    E.   61.56 seconds

43. **Use the information below to answer the question that follows.**

- The grocery store is located three miles away from the house.

- The house is located four miles away from the highway.

Based on the information above, which of the following conclusions can be made?

A. The grocery store is no more than three miles away from the highway.

B. The grocery store is no more than one mile away from the highway.

C. The grocery store is no more than seven miles away from the highway.

D. The grocery store is exactly three miles from the highway.

E. The grocery store is exactly four miles from the highway.

44. **Use the information below to answer the question that follows.**

- If the distance to a destination is greater than 10 miles from home, then Matt will drive his car.

- If the distance to a destination is greater than 2 miles but less than 10 miles from home, then Matt will ride his bicycle.

- If the distance to a destination is less than 2 miles from home, then Matt will walk.

If Matt rode his bicycle to Zachary's apartment, which of the following statements could be true?

A.   Matt's home is less than 1 mile from Zachary's apartment.

B.   Matt and Zachary live within 2 miles of each other.

C.   Zachary's apartment is about 7 miles from Matt's home.

D.   Zachary's apartment is at least 10 miles from Matt's home.

E.   The round trip distance between Matt's and Zachary's is greater than 20 miles.

45. **Use the statements below to answer the question that follows.**

There will be softball practice every Saturday throughout the season with the following exceptions:

- If it rains, softball practice will be canceled.

- There is no softball practice on the third Saturday of the month.

If it is Saturday but there is no softball practice, then it must be true that:

A.   it is raining.

B.   it is the third Saturday of the month.

C.   it is raining and it is the third Saturday of the month.

D.   it is raining or it is the third Saturday of the month.

E.   softball games are on the third Saturday of the month.

46. **Use the table below to answer the question that follows.**

Middle School Bell Schedule		
Class Period	**Start Time**	**End Time**
Second	8:40 A.M.	9:36 A.M.
Third	9:40 A.M.	10:36 A.M.
Fourth	10:40 A.M.	11:36 A.M.
Lunch	11:40 A.M.	12:15 P.M.
Fifth		1:15 P.M.

The partial school schedule above shows the start times and end times of class periods. Except for lunch, all classes are the same length. What is the missing start time for fifth period?

A.   12:15 P.M.

B.   12:19 P.M.
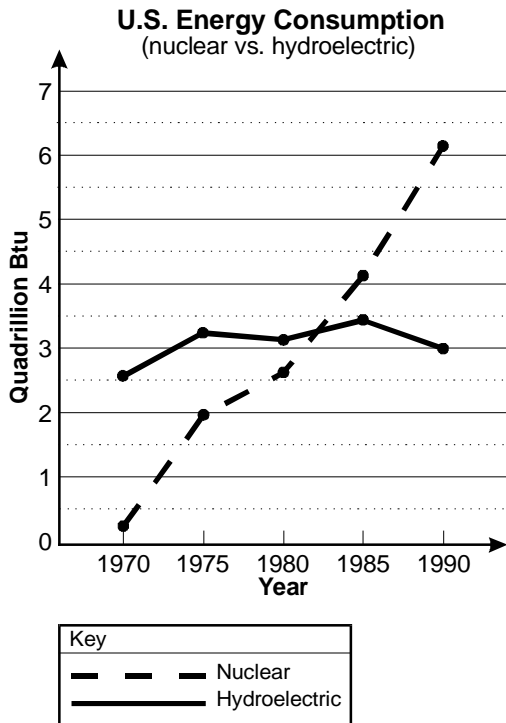
C.   12:30 P.M.

D.   12:36 P.M.

E.   12:40 P.M.

47.   **Use the chart below to answer the question that follows.**

U.S. and World Silver Production in Metric Tons		
Year	United States	World
1930	1578	7736
1935	1428	6865
1940	2164	8565
1945	904	5039
1950	1347	6323
1955	1134	6967
1960	1120	7505
1965	1238	8007

How many metric tons of silver were produced outside the United States in 1950?

A.   4976 metric tons

B.   5024 metric tons

C.   5620 metric tons

D.   5833 metric tons

E.   6323 metric tons

48.   **Use the graph below to answer the question that follows.**

U.S. Energy Consumption
(nuclear vs. hydroelectric)

Key	
– – – –	Nuclear
————	Hydroelectric

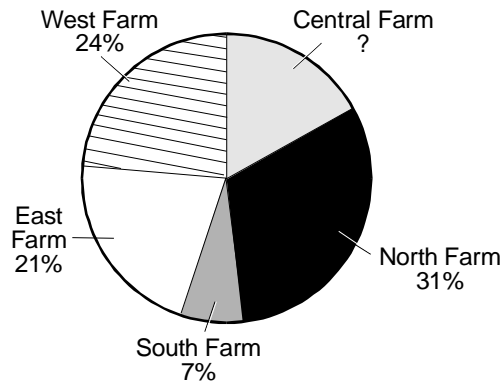According to the graph above, what was the maximum
difference in energy consumption between the two sources
of energy in any one of the years shown?

A.   0.4 quadrillion Btu

B.   2.0 quadrillion Btu

C.   2.4 quadrillion Btu

D.   3.2 quadrillion Btu

E.   5.9 quadrillion Btu

49.   **Use the chart below to answer the question that follows.**
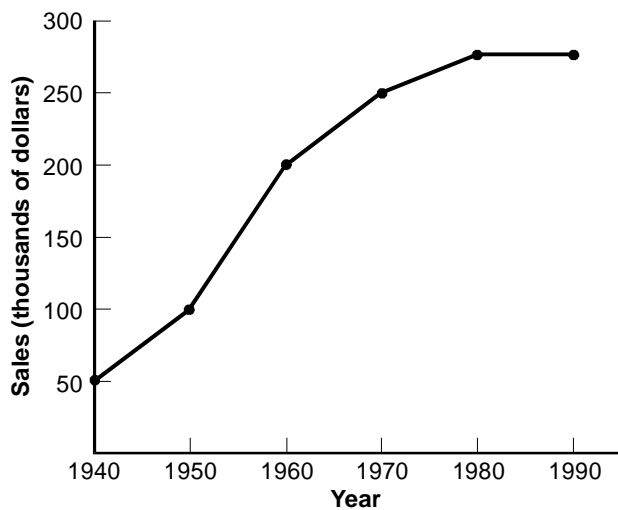
Percent of Total Corn Crop Yield in 1999

What percent of the total crop yield did the Central Farm
generate in 1999?

A.   17%

B.   24%

C.   38%

D.   41%

E.   48%

50.   **Use the graph below to answer the question that follows.**

The graph shows the sales of a commodity over a 60-year period. Between what years did sales increase by the greatest amount?

A.   between 1940 and 1950

B.   between 1950 and 1960

C.   between 1960 and 1970

D.   between 1970 and 1980

E.   between 1980 and 1990

MATHEMATICS SKILL AREA WORKSHEET ONE

Estimation, Measurement, & Statistical Principles

Using the Skill Area Worksheet

Skill area worksheets are provided to assist you in evaluating your multiple-choice responses. Each worksheet contains four columns. The first column indicates the multiple-choice question number and the second column indicates the correct response. The third and fourth columns are for your use in calculating the number of multiple-choice questions you answered correctly. Transfer your answers from the answer sheet to the third column of the skill area worksheet. In the fourth column, indicate which questions you answered correctly by placing a checkmark next to each question with a correct response.

Question Number	Correct Response	Your Response	Correct?
1	C		
2	D		
3	C		
4	B		
5	D		
6	B		
7	E		
8	D		
9	B		
10	D		
11	E		
12	A		
13	B		
14	D		
15	D		

Count the number of questions that you answered correctly.

_____ of 15 questions

MATHEMATICS SKILL AREA WORKSHEET TWO

Computation & Problem Solving

Using the Skill Area Worksheet

Skill area worksheets are provided to assist you in evaluating your multiple-choice responses. Each worksheet contains four columns. The first column indicates the multiple-choice question number and the second column indicates the correct response. The third and fourth columns are for your use in calculating the number of multiple-choice questions you answered correctly. Transfer your answers from the answer sheet to the third column of the skill area worksheet. In the fourth column, indicate which questions you answered correctly by placing a checkmark next to each question with a correct response.

Question Number	Correct Response	Your Response	Correct?
16	C		
17	E		
18	A		
19	C		
20	B		
21	A		
22	D		
23	A		
24	E		
25	E		
26	A		
27	B		
28	E		
29	B		
30	B		
31	B		
32	E		
33	E		

Count the number of questions that you answered correctly.

_____ of 18 questions

33

MATHEMATICS SKILL AREA WORKSHEET THREE
Numerical & Graphic Relationships

Using the Skill Area Worksheet

Skill area worksheets are provided to assist you in evaluating your multiple-choice responses. Each worksheet contains four columns. The first column indicates the multiple-choice question number and the second column indicates the correct response. The third and fourth columns are for your use in calculating the number of multiple-choice questions you answered correctly. Transfer your answers from the answer sheet to the third column of the skill area worksheet. In the fourth column, indicate which questions you answered correctly by placing a checkmark next to each question with a correct response.

Question Number	Correct Response	Your Response	Correct?
34	D		
35	D		
36	D		
37	C		
38	D		
39	E		
40	B		
41	B		
42	B		
43	C		
44	C		
45	D		
46	B		
47	A		
48	D		
49	A		
50	B		

Count the number of questions that you answered correctly.

_____ of 17 questions

INTERPRETING YOUR RESULTS

Because of differences in format and difficulty between the actual CBEST and the practice test, you cannot use your performance on the CBEST Practice Test to predict how you might score on the official CBEST.

The practice test provides valuable information regarding your preparedness in the skill areas tested by the CBEST. If you answered correctly all or most of the questions associated with a given skill area, you may choose to review only briefly the content of that skill area as you prepare for the test. If you answered incorrectly all or many items associated with a skill area, you may choose to allocate additional preparation time to study content in that skill area. For skill areas in which you performed poorly, you may also wish to identify other resources for preparing for the test (e.g., assistance from a mentor, participation in a study group).

Developed and Produced by