

# Math Power

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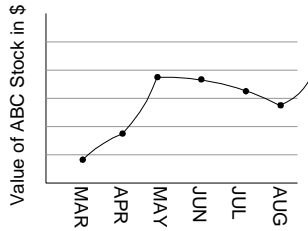
Sample

Sample

LEVEL 1 & 2.....	2
LEVEL 2 & 3.....	10
LEVEL 4 & 5.....	17

Level 1 & 2

1. Over which interval was the growth in the value of the stock of the ABC Company most rapid?



- A) March to April  
 B) April to May  
 C) May to June  
 D) June to July

3.  $\frac{1}{3 \div 5 \times 2} =$

- A)  $1 \div 3 \div 5 \times 2$   
 B)  $\frac{5}{3 \times 2}$   
 C)  $\frac{5 \times 2}{3}$   
 D)  $1 \times 3 \div 5 \div 2$

4. What is the average (arithmetic mean) of the temperatures shown on the table?

TEMPERATURE IN CITY X  
ON DEC. 6

6 A.M.	10° below zero
8 A.M.	2° below zero
10 A.M.	15° above zero

2. Find the smallest positive integer that is a multiple of both 21 and 77.

- A) 7  
 B) 33  
 C) 98  
 D) 231

- A) 5° above zero  
 B) 3° above zero  
 C) 1° above zero  
 D) 1° below zero

## MAP 280+ Sample

5.  $\sqrt{8}\sqrt{98} =$

A) 4

B) 6

C) 24

D) 28

6. At 9 A.M. it was 12 degrees below zero. By noon the temperature had dropped 7 degrees. Over the next two hours, the temperature rose 5 degrees. What was the temperature at 2 P.M.?

A)  $0^{\circ}$

B)  $10^{\circ}$  below zero

C)  $14^{\circ}$  below zero

D)  $24^{\circ}$  below zero

7. Here are two different ways to add:

- First add the numbers, then round it to the nearest 10.

- First round the numbers to the nearest 10, then add.

In which of the following expressions will the result be the same with either method?

A)  $16+26$

B)  $14 + 34$

C)  $17+47$

D)  $24+57$

8. Express the product of  $8 \times 10^{20}$  and  $8 \times 10^{40}$  in scientific notation.

A)  $6.4 \times 10^{61}$

B)  $64 \times 10^{60}$

C)  $6.4 \times 10^{50}$

D)  $6.4 \times 10^{60}$

## MAP 280+ Sample

9.  $0.25^{-2} =$
- A) -0.625
  - B) -0.50
  - C) 0.50
  - D) 16
10. Two teams are having a contest, in which the prize is a box of candy that the members of the winning team will divide evenly. If team A wins, each player will get exactly 3 pieces of candy and if team B wins, each player will get exactly 5 pieces of candy. Which of the following could be the number of pieces of candy in the box?
- A) 153
  - B) 435
  - C) 333
  - D) 425
11. Zim buys a calculator that is marked 30% off. If he pays \$35. What was the original price?
- A) \$24.50
  - B) \$45.50
  - C) \$47.00
  - D) \$50.00
12. A cat is fed  $\frac{3}{8}$  of a pound of cat food every day. For how many days will 60 pounds of this cat food feed the cat?
- A) 160
  - B) 180
  - C) 240
  - D) 360

MAP 280+ Sample

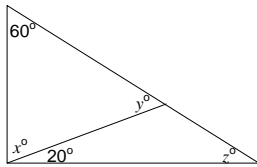
13. A train travels 80 miles per hour.  
Departing from Rockville at 2:35  
P.M., when will it arrive at Sandville,  
120 miles away?

- A) 3:35 P.M.
- B) 3:45 P.M.
- C) 4:00 P.M.
- D) 4:05 P.M.

15.  $\frac{4^6 \times 3^4 \times 2^2}{4^2 \times 3^4 \times 2^6} =$

- A) 1
- B) 2
- C) 8
- D) 16

14. In the right triangle below,



what is the value of  $z$ , in terms of  $x$ ?

- A)  $100 - x$
- B)  $80 - x$
- C)  $x - 50$
- D)  $x + 20$

16. Write the sum of  $4 \times 10^6$  and  $6 \times 10^4$  in scientific notation:

- A)  $24 \times 10^{10}$
- B)  $2.4 \times 10^{11}$
- C)  $40.6 \times 10^6$
- D)  $4.06 \times 10^6$

## MAP 280+ Sample

17. One-third the product of two numbers is 24. One-half the product of these same two numbers is

- A) 72
- B) 54
- C) 48
- D) 36

18.  $19\frac{1}{4} - 7\frac{2}{3} =$

- A)  $10\frac{1}{4}$
- B)  $11\frac{7}{12}$
- C) .0025
- D) 2.5

19. During a dull football game,  $\frac{1}{4}$  of the spectators left after 1 hour. During the next hour another 20,000 spectators left. There were now  $\frac{1}{12}$  of the original number of spectators still watching the game. How many spectators were originally present?

- A) 120,000
- B) 60,000
- C) 40,000
- D) 30,000

20. A yard is 3 feet. The area of a square with each side 9 feet long is

- A) 1 yd<sup>2</sup>
- B) 9 yd<sup>2</sup>
- C) 81 yd<sup>2</sup>
- D) 243 yd<sup>2</sup>

**MAP 280+ Sample**

21. If  $x = 3$ , what is the value of  $\frac{5(4+x)}{2x}$ ?

A) 15

B)  $\frac{25}{2}$

C) 10

D)  $\frac{35}{6}$

23.  $3.6 \div \frac{2}{3} =$

A) 2.4

B) 5.4

C) 6

D) 9

22.  $\frac{3}{6} \times \frac{4}{8} \times \frac{5}{10} \times \frac{6}{12} =$

A) 1

B)  $\frac{1}{2}$

C)  $\frac{1}{4}$

D)  $\frac{1}{16}$

24. Five hamburgers and one order of fries together cost \$10.24, while one hamburger and five orders of fries together cost \$5.84. What is the total cost of three hamburgers and three orders of fries?

A) \$13.20

B) \$12.72

C) \$8.04

D) \$3.30

MAP 280+ Sample

25. The square root of  $6\frac{1}{4}$  is

- A)  $3\frac{1}{8}$
- B) 0.25
- C)  $2\frac{1}{2}$
- D) 25

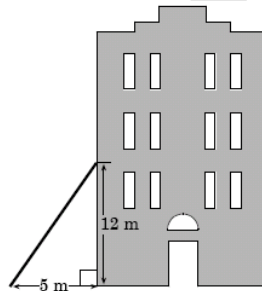
27. Which of the following is a multiple of 4?

- A) 10,002
- B) 10,030
- C) 10,100
- D) 100,006

26. Which of the following is an irrational number?

- A)  $\sqrt{2}^0$
- B) 3.141596
- C)  $\frac{10}{7}$
- D)  $\sqrt{26}$

28. A ladder leans against the side of a building.



The base of the ladder is 5 meters from the building, and the top is 12 meters above the ground. What is the length of the ladder?

- A) 11 meters
- B) 13 meters
- C) 17 meters
- D) 169 meters



MAP 280+ Sample

29. What is the value of  $x$  in the following equation?

$$\frac{2.5}{x} = 0.04$$

- A) 100
- B) 62.5
- C) 0.10
- D) 0.016

Sample

30. A huge regular pentagon with each side  $5^{10}$  feet. If the perimeter is  $5^{\square}$  feet, what is the value of  $\square$ ?

**Level 2 & 3**

31. If  $q + r + s = 117$ , and  $q = s = 4r$ , then  $r =$

- A) 13
- B) 18
- C) 30
- D) 42

32.  $4\left(\sqrt{\frac{169}{36}} - \sqrt{\frac{121}{144}}\right) =$

- A) 1
- B) 2
- C) 4
- D) 5

33. Maria is now 16 years old. In 6 years, she will be twice as old as her brother is then. How old is her brother now?

- A) 5
- B) 6
- C) 8
- D) 11

34. Let  $x$  represent a positive integer. Which of the following must be true?

- A) If  $5x$  is even, then  $x$  must be even.
- B) If  $5 + x$  is odd, then  $x$  must be odd.
- C) If  $3x + 7$  is even, then  $x$  must be even.
- D) If  $x + 1$  is even, then  $x + 12$  must be even.

**MAP 280+ Sample**

35. Which of the following is a multiple of 10?

- A) 10,005
- B) 10,030
- C) 10,101
- D) 100,005

37. If  $\frac{2x-3}{4} = 8$ , then  $2x + 3 =$

- A) 44
- B) 41
- C) 38
- D) 35

36. Five apples and 6 bananas together cost as much as 8 bananas and 9 pears. One apple costs as much as 2 pears. For the same price as 1 pear, how many bananas could be bought?

- A) 1
- B) 2
- C) 3
- D) 4

38. If 10 men build a 6-room house in 30 days, how many days will it take 15 men working at the same rate?

- A) 180
- B) 25
- C) 45
- D) 20

MAP 280+ Sample

39.  $0.\overline{3} \times 0.\overline{3} =$

A) 0.09

B)  $0.\overline{09}$

C)  $0.\overline{1}$

D)  $0.\overline{6}$

41. Kobi has \$9.83, made up of nickels and pennies only. Which of the following could not be a possible value for the number of pennies?

A) 208

B) 113

C) 93

D) 85

40. Which of the following is equivalent to the inequality

$$9 - x < 7 < 15 - x?$$

A)  $x > 2$

B)  $x < 8$

C)  $1 < x < 4$

D)  $2 < x < 8$

42. What are the prime factors of 24?

A) 1, 2, and 3

B) 2, 3, and 6

C) 2, 3, and 5

D) 2 and 3 only

**MAP 280+ Sample**

43. Which of the following is 81,455 rounded to the nearest 100?

- A) 81,000
- B) 81,400
- C) 81,500
- D) 82,0

45. One-half of one-sixth is equal to

- A) one-third of one-fourth
- B) one-third
- C) one
- D) two

44. If  $x + 2y = 6$ , and  $4z = 6$ , what is the value of  $2x + 4y + 6z$ ?

- A) -6
- B) 12
- C) 15
- D) 21

46. The product of the first ten prime numbers must be divisible by

- A) 16
- B) 18
- C) 20
- D) 22

MAP 280+ Sample

47.  $3\frac{1}{2} + (\frac{1}{2} + \frac{2}{5})^2 =$

- A) 5.2
- B) 5.31
- C) 5.00
- D) 4.31

49. If  $x = -3$  and  $y = 2$ , what is the value of  $(5y - xy)^2$ ?

- A) 16
- B) 64
- C) 81
- D) 256

48.  $0.75^2 + 2 \cdot \frac{3}{4} \cdot 1\frac{1}{4} + (\frac{5}{4})^2 =$

- A) 1
- B) 2
- C) 3
- D) 4

50. If the numeral Q,R SX, Y23.1 is multiplied by 100, which letter will be in the million place?

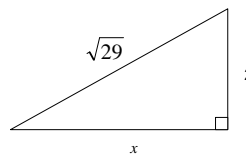
- A) Q
- B) R
- C) S
- D) X

**MAP 280+ Sample**

51. A plumber has a pipe 18 feet long. He used the following lengths on three separate jobs:  $7\frac{1}{2}$  inches, 3 feet, 2 yards. How long was the piece of pipe he had left?

- A)  $91\frac{1}{2}$  inches
- B)  $112\frac{1}{2}$  inches
- C) 9 feet
- D)  $100\frac{1}{2}$  inches

53. What is the length of side  $x$  of the triangle shown below?



- A)  $\sqrt{5}$
- B) 25
- C)  $\sqrt{33}$
- D) 5

# Sample

52.  $1\frac{5}{16} \times 1\frac{1}{3} \times 1\frac{1}{7} =$

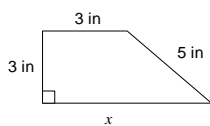
- A)  $2\frac{1}{3}$
- B)  $2\frac{1}{4}$
- C) 2
- D)  $3\frac{1}{7}$

54. For how many integer values of  $n$  will the expression  $\frac{n-10}{14-n}$  have a positive value?

- A) 0
- B) 1
- C) 3
- D) 4

## MAP 280+ Sample

55. Find the length of  $x$  in the figure below.



A) 4 in

B) 3 in

C) 5 in

D) 7 in

# Sample



**Level 4 & 5**

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56. What is three-fourths of two-thirds of one-half?

57.  $11 \times 17\frac{1}{3} - 17 \times 11\frac{1}{3} =$

58. If the average of 7 consecutive odd numbers is 131, what is the largest number?

59. There are only 120 chairs set up in the gym for the play. Three and one third of that many are still needed for the audience. How many in total will be used?

60. Mrs. Thompson determines math grades based on 5 tests, each worth 100 points. An average of at least 80 points is needed for a grade of B. On the first 4 tests, Hilary scored 91, 72, 69, and 83. What is the lowest score she may receive on the final test and still earn a B?

61. Eight years from now, Una will be twice as old as her brother then. Una is now 12 years old. How old is her brother now?

62. Two numbers form a “couple” if the sum of their reciprocals equals 2. For example, 8 and  $\frac{8}{15}$  are a couple because  $\frac{1}{8} + \frac{15}{8} = 2$ . If  $x$  and  $y$  form a couple and  $x = \frac{7}{3}$ , what is the value of  $y$ ? (In fraction)

**MAP 280+ Sample**

63. Solve the equation:  $\frac{2x+1}{x} = \frac{4x-1}{2x-1}$

Hint: square difference formula

$$(A + B)(A - B) = A^2 - B^2$$

68. If the numeral Q,RSX,Y23.1 is multiplied by 100, which letter will be in the million place?

A) Q

B) R

C) S

D) X

64.  $1 + 3 + 5 + 7 + \dots + 49 = \square^2$

Find the value of  $\square$ .

65.  $4^{13} + 4^{13} + 4^{13} + 4^{13} = 16^\square$

69. If  $t = 9$  feet, what is the value of  $16t^2$ ?

A) 144 sq ft

B) 1296 sq ft

C) 432 sq ft

D) 12,960 sq ft

66. What is the average (arithmetic mean) of all the integers from  $-n$  to  $n + 1$ ?

67. Find the pattern:  
1, 20, 400, 8000, \_\_\_\_\_.

**MAP 280+ Sample**

70. A box contains gold coins. If the coins are equally divided among 6 people, 4 coins are leftover. If the coins are equally divided among 5 people, 3 coins are left over. If the box holds less than 50, how many coins are left when equally divided among 7 people?

A) 0

B) 1

C) 2

D) 3

Sample

# Answer Key

Your order will receive the answer/explanation to each question.

1. B

3. B

5. D

7. D

9. D

11. D

13. D

15. D

17. D

19. D

21. D

23. B

25. C

27. C

29. B

31. A

33. A

$$16 + 6 = 22$$

$$22 \div 2 = 11$$

$$11 - 6 = 5$$

35. B

37. C

$$\frac{2x-3}{4} = 8$$

$$2x - 3 = 32$$

$$2x + 3 = 38$$

39. C

$$0.\overline{3} = \frac{1}{3}$$

$$\frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$$

$$\frac{1}{9} = 0.\overline{1}$$

40. D

$$\begin{array}{r} -x < -15 \\ < x < 15 \end{array} \quad \begin{array}{l} \text{(add 7)} \\ \text{(subtract 7)} \end{array}$$

41. D

43. C

45. A

47. D

49. D

51. D

$$2 \text{ yd} = 6 \text{ ft}$$

$$6 + 3 = 9 \text{ ft}$$

$$18 - 9 = 9$$

$$9 \text{ ft} - 7\frac{1}{2} \text{ in}$$

$$= 8 \text{ ft } 4\frac{1}{2} \text{ in}$$

$$= 96 \text{ in} + 4\frac{1}{2} \text{ in}$$

$$= 100\frac{1}{2} \text{ in}$$

# MAP 280+ Sample

53. D

55. D

57. -2

$$17 \times 11\frac{1}{3} - 11 \times 17\frac{1}{3} = 17 \times \frac{1}{3} - 11 \times \frac{1}{3} = 6 \times \frac{1}{3} = 2$$

59. 520

$$1 + 3\frac{1}{3} = 4\frac{1}{3}$$
$$4\frac{1}{3} \times 120 = 520$$

61. 2

$$12 + 8 = 20$$
$$20 \div 2 = 10$$
$$10 - 8 = 2$$

63. 1

Cross-multiply:

$$(2x - 1)(2x + 1) = x(4x - 1)$$

$$4x^2 - 1 = 4x^2 - x$$

$$x = 1$$

65.  $4 \times 4^{13} = 4^{14} = 16^7$

67. 160,000

69. B

Sample