| 2 | **Module**
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Math

35 MINUTES, 22 QUESTIONS

DIRECTIONS

The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.
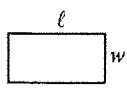
NOTES

Unless otherwise indicated:
- All variables and expressions represent real numbers.
- Figures provided are drawn to scale.
- All figures lie in a plane.
- The domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.
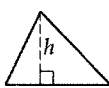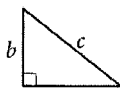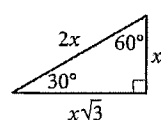
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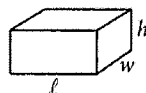
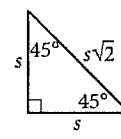
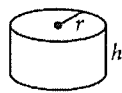
$A = \pi r^2$
$C = 2\pi r$

$A = \ell w$

$A = \frac{1}{2}bh$

$c^2 = a^2 + b^2$
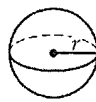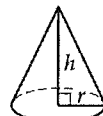
Special Right Triangles

$V = \ell wh$

$V = \pi r^2 h$

$V = \frac{4}{3}\pi r^3$

$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}\ell wh$

The number of degrees of arc in a circle is 360.
The number of radians of arc in a circle is 2π.
The sum of the measures in degrees of the angles of a triangle is 180.

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For multiple-choice questions, solve each problem, choose the correct answer from the choices provided, and then circle your answer in this book. Circle only one answer for each question. If you change your mind, completely erase the circle. You will not get credit for questions with more than one answer circled, or for questions with no answers circled.

For student-produced response questions, solve each problem and write your answer next to or under the question in the test book as described below.

- Once you've written your answer, circle it clearly. You will not receive credit for anything written outside the circle, or for any questions with more than one circled answer.
- If you find more than one correct answer, write and circle only one answer.
- Your answer can be up to 5 characters for a positive answer and up to 6 characters (including the negative sign) for a negative answer, but no more.
- If your answer is a fraction that is too long (over 5 characters for positive, 6 characters for negative), write the decimal equivalent.
- If your answer is a decimal that is too long (over 5 characters for positive, 6 characters for negative), truncate it or round at the fourth digit.
- If your answer is a mixed number (such as $3\frac{1}{2}$), write it as an improper fraction (7/2) or its decimal equivalent (3.5).
- Don't include symbols such as a percent sign, comma, or dollar sign in your circled answer.

Module
2

1

If $3a + 8b = 2b$, what is the value of $\dfrac{a}{b}$?

2

If $f(x) = 5x + 2$ and $f(x + 1) - f(x - 1) = 2x$, then x is equivalent to?

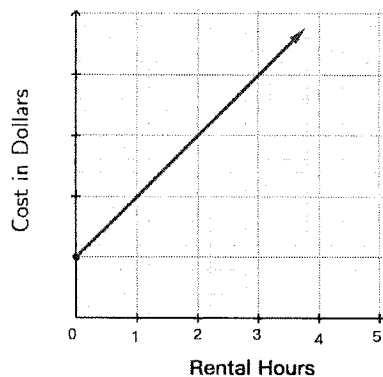A) $-\dfrac{1}{2}$

B) 5

C) $\dfrac{2}{3}$

D) 3

3

$$2x - y = 7$$
$$x + 2y = -4$$

The system of equations is given. What is the value of $x^3 + y^3$?

A) 11
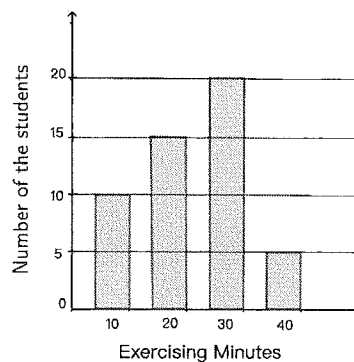
B) 35

C) -19

D) -11

4

Rental Hours

The graph shows the cost for renting a bike. The shop charges a flat fee plus a daily cost. Based on the graph, what does the slope of the graph represent?

A) The flat fee of renting a bike

B) The daily cost of renting the bike

C) The total cost of renting the bike

D) The maximum cost of renting the bike

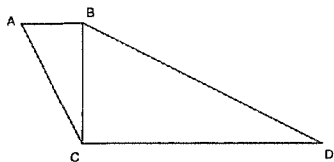### 5

Exercising Minutes

The histogram above shows the time that students spend exercising after school every day. What is the mean exercising time, in minutes, of the 50 students?

6

If $3x^2 + 4x - 32 = 0$ and $x < 0$, what is the value of x^3 ?

A) -16

B) -64

C) 64

D) 16

7

In the figure above, CD=8 and BC=4. If the right triangles ABC and BCD are similar, what is the length of AB?

A) 6

B) 2

C) 3

D) 8

8

During the holidays, the ratio of those who stayed home to those who chose to travel is 3:2, and the ratio of females to males who chose to stay at home is 3:5. What is the percentage of females who chose to stay at home?

A) 15%

B) 37.5%

C) 25%

D) 22.5%

9

$$P(h) = 500(2)^{\frac{h}{4}}$$

The number of flies in a population doubles every 4 hours. If there are initially 500 flies, how many hours will it take for the number of flies to reach 8 times the initial number?

10

The function f is defined by $f(x) = -\dfrac{1}{n}x - \dfrac{1}{2}$, where n is a constant. The x-intercept of the graph of $y = f(x)$ in the xy-plane is $(4, 0)$. What is the value of n ?

A) 8

B) $\dfrac{1}{8}$

C) -8

D) $-\dfrac{1}{8}$

11

A gardening supply company sells sod, a patch of grass, at a rate of \$18 per square yard. What price does the company charge for 36 square feet of sod? (1 yard = 3 feet)

A) \$72

B) \$216

C) \$24

D) \$648

2 Module **2** **2**

12

$$\frac{3}{2}k - \frac{1}{2}k = 18$$

What is the solution to the given equation?
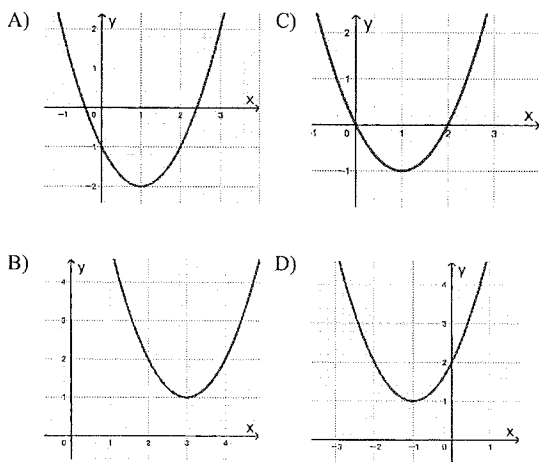
A) 9

B) 6

C) 36

D) 18

13

Georgia travels the first 16 miles at a rate of 6 mph and the next 16 miles at a rate of 12 mph. What is the average speed, in mph, for the 32 mile trip?

A) 9

B) 8

C) 3

D) 5

14

Which of the following graphs represents the graph of $y = x^2 - 2x + 2$ in the xy-plane that has been shifted down 2 units?
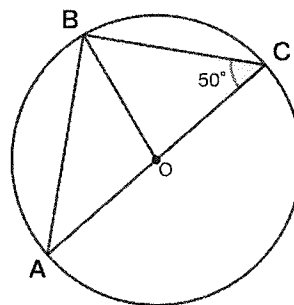
A)

C)

B)

D)

15

$$y = x^2 - 8x + 40$$
$$y = 6x - 8$$

If (x, y) is a solution to the system of equations above, which of the following is a possible value of the product $x \cdot y$?

A) 240

B) 224

C) 320

D) 48

16

In the figure above, point O is the center of the circle and the radians of the circle is 9. What is the length, in radians, of minor arc BC?

A) 2π

B) 4π

C) $\frac{5}{2}\pi$

D) 3π

Practice Test 7

17

A sports team bought \$2700 worth of energy drinks. Some of the energy drinks cost \$35 per dozen and the others cost \$20 per dozen. If 2 times as many \$35-energy drinks as \$20-energy drinks were bought, how many dozens of energy drinks were bought in total?

18

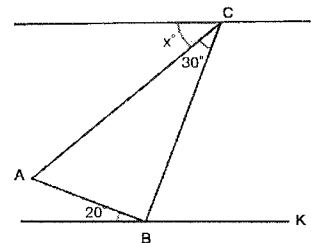$$(5x^6 - a) - (b x^6 + 2) - (x^5 + 6) = 3x^6 + c x^5 - 15$$

In the equation above, a, b, and c are constants. If the equation is true for all values of x, what is the value of $(a + b + c)$?

19

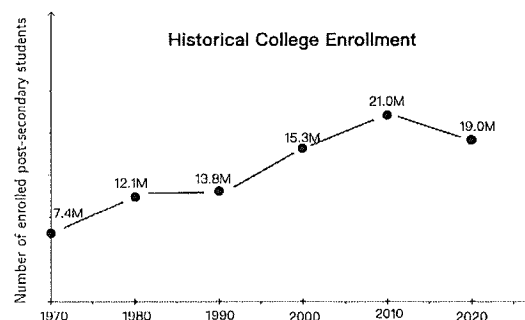Which expression is equivalent to $b^{\frac{1}{2}} \cdot (b^{\frac{1}{2}})^{\frac{1}{3}}$?

A) $\sqrt[3]{b^4}$

B) $\sqrt[3]{b^2}$

C) $\sqrt[12]{b}$

D) $\sqrt[3]{b}$

20

In the figure above, triangle ABC is a right triangle and lines j and K are parallel. What is the value of x^0 ?
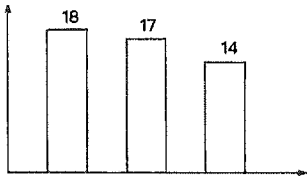
21

The total number of enrolled post-secondary students from 1970-2020 is shown above, according to the College Enrollment Statistics. During which 10-year period was there negative growth in post-secondary student enrollment?

A) 1980—1990

B) 1990—2000

C) 2000—2010

D) 2010—2020

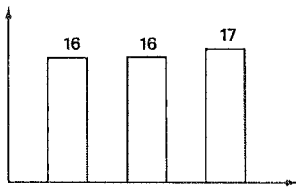**2** Module **2** **2**
2

22

Which of the following data sets has the least standard deviation?

A)

B)

C)

D)