Math

35 MINUTES, 22 QUESTIONS

DIRECTIONS

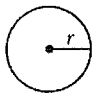
The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.

NOTES

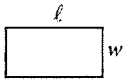
Unless otherwise indicated:

- 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.

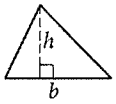
REFERENCE



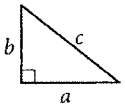
$A = \pi r^2$
$C = 2\pi r$



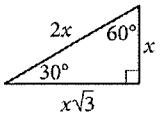
$A = \ell w$

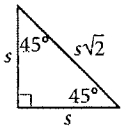


$A = \frac{1}{2}bh$

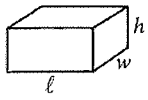


$c^2 = a^2 + b^2$

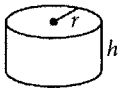




Special Right Triangles

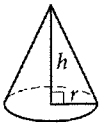


$V = \ell wh$

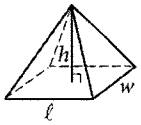


$V = \pi r^2 h$

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



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



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

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.

WEEK5.2

2 Module 1 2

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.

2 Module 1 2

1

$$(6k - 4) - (3k - 2) = 3 - 2k$$

What value of k satisfies the given equation?

A) -2

B) 1

C) 5

D) $\frac{9}{5}$

2

Which of the following is equivalent to $9x^2 \geq 36$?

A) $12 \leq x$

B) $x \geq 2$ or $x \leq -2$

C) $-2 \leq x \leq 2$

D) $x \leq 2$ or $x \geq -2$

3

What is 110% of 629?

A) 691.9

B) 566.1

C) 314.5

D) 125.8

4

David decided to work at a part-time job for 3 hours after school every day to save up money for a new computer. The part-time job pays j dollars per hour and the bus fare for the commute is 4 dollars per day. If the price of the new computer is y dollars, how many days, x, does David need to work to pay for the new computer?

A) $x = \frac{y}{(3 - 4)j}$

B) $x = \frac{y}{3j}$

C) $x = \frac{y}{3j - 4}$

D) $x = \frac{y}{3j + 4}$

5

$$x^3 + (a - 5)x^2 + c = bx^3 + x^2 - 5$$

In the equation above, a, b, and c are constants. What is the value of $(a + b + c)$?

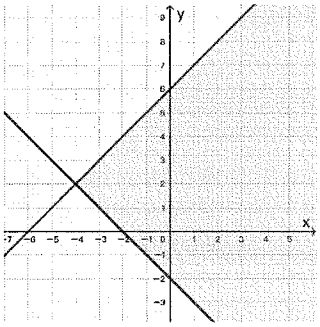
A) 2

B) 12

C) 0

D) 10

6



In the x y-plane, which of the following inequality systems does the shaded region represent?

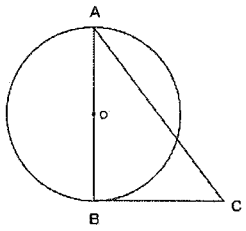
A) $y \leq 2x + 6$
$y \geq -x - 2$

B) $y \leq x + 6$
$y \leq -x - 2$

C) $y \geq x + 6$
$y \geq -x - 2$

D) $y \geq x + 6$
$y \leq -x - 2$

7



In the figure above, AB, the diameter of the circle, is equal to 12. For the right triangle ABC, AC=15. What is the perimeter of the right triangle?

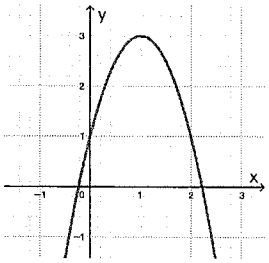
A) 27

B) 30

C) 36

D) 40

8



The figure above shows the graph of a quadratic function on the x y-plane. Which of the following quadratic functions satisfies the graph?

A) $f(x) = -2(x-1)^2 - 3$

B) $f(x) = -2(x+1)^2 + 3$

C) $f(x) = -2(x-1)^2 + 3$

D) $f(x) = -2(x+1)^2 - 3$

9

A circle in the x y-plane has center (-2, -4) and radius R. If the circle passes through the point (5, 2), what is the value of R^2?

10

A store has 50 gift-bags. On the first day, 30% of the bags were sold, and on the second day, 20% of the remaining bags were sold. How many bags were left on the third day?

A) 25

B) 28

C) 22

D) 21

11

A car travels 6 hours at a constant speed of 60 kilometers per hour. What is the distance, in kilometers, the car travels?

A) 360

B) 36

C) 10

D) 30

12

	Girls	Boys	Total
Business	50	50	100
Science	30	60	90
Health	50	20	70
Others	20	20	40
Total	150	150	300

A school conducted a survey on seniors to investigate which major they plan to study in college. If a senior is selected randomly, what is the probability of selecting a boy who is planning to study business?

A) $\frac{1}{6}$

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

C) $\frac{1}{3}$

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

13

The median of a set of 10 consecutive odd integers is 20. What is the smallest number in the set?

14

$$4x^2 - 16 = 84$$

What is the one possible solution to the given equation?

A) 100

B) 17

C) -5

D) 25

15

$$|4x + 8| = 16$$

What is the negative solution to the given equation?

A) -2

B) -6

C) -24

D) -8

16

A restaurant bought 100 plates that include large and small sizes for a total of \$600. Each large plate L costs \$5.5 and each small plate S costs \$3.5. Which of the following systems of equations represents this situation?

A) $L + S = 100$
$5.5L + 3.5S = 600$

B) $L + S = 100$
$5.5L + 3.5S = 100$

C) $L + S = 600$
$5.5S + 3.5L = 600$

D) $L + S = 100$
$(5.5S + 3.5)L \cdot S = 600$

17

A standard barrel of beer can hold 31 gallons. How many liters of beer can this barrel hold? (round to the nearest whole number; 1 gallon≈3.79 liters)

18

Daniel bought a refrigerator for a total price of \$1,071. If the total price included a 5% sales tax, how much sales tax, in dollars, did Daniel pay?

A) 1020

B) 51

C) 53.55

D) 63

19

Which expression is equivalent to $\sqrt[3]{x} \cdot \sqrt[3]{x^2}$?

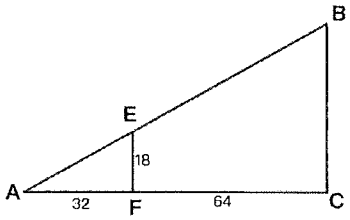
A) $x^{\frac{1}{5}}$

B) $x^{\frac{1}{3}}$

C) x

D) $x^{\frac{1}{2}}$

20



Right triangle ABC and right triangle AEF are shown above. If AF=32, FC=64, and EF=18, what is the length of BC?

A) 54

B) 36

C) 18

D) 16

21

If the height of a cuboid is increased by 4 centimeters, it becomes a cube with sides of 10 centimeters. What is the volume, in cubic centimeters, of the original cuboid?

22

Minna plans to produce m number of bracelets. If Minna makes 12 bracelets everyday, there will be 4 less than m bracelets after 8 days. If Minna makes 15 bracelets everyday, there will be 5 more than m bracelets after x days. What is the value of x ?

A) 30

B) 20

C) 40

D) 15

No Test Material On This Page