

Math Questions

Sample Mathematics Questions: Set 2

Alg II, Pre-Calc, Math III,
college math
2, 3, 5, 7, 8
Krauss

Click on the letter choices to determine if you have the correct answer and for question explanations. An actual ACT Mathematics Test contains 60 questions to be answered in 60 minutes.

DIRECTIONS: Solve each problem, choose the correct answer, and then fill in the corresponding oval on your answer document.

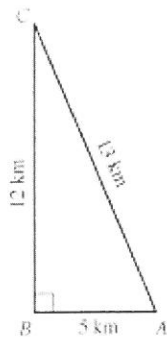
Do not linger over problems that take too much time. Solve as many as you can; then return to the others in the time you have left for this test.

You are permitted to use a calculator on this test. You may use your calculator for any problems you choose, but some of the problems may best be done without using a calculator.

Note: Unless otherwise stated, all of the following should be assumed.

1. Illustrative figures are NOT necessarily drawn to scale.
2. Geometric figures lie in a plane.
3. The word *line* indicates a straight line.
4. The word *average* indicates arithmetic mean.

1. The *lead* of a screw is the distance that the screw advances in a straight line when the screw is turned 1 complete turn. If a screw is $2\frac{1}{2}$ inches long and has a lead of $\frac{1}{8}$ inch, how many complete turns would get it all the way into a piece of wood?
A. 5
B. 10
C. 15
D. 20
E. 25
2. If $xy = 144$, $x + y = 30$, and $x > y$, what is the value of $x - y$?
F. 4
G. 6
H. 18
J. 22
K. 24
3. Which of the following is the sine of $\angle A$ in the right triangle below?



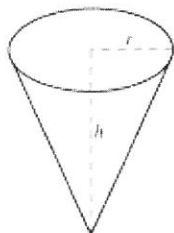
- A. $\frac{5}{13}$
- B. $\frac{5}{12}$
- C. $\frac{12}{13}$
- D. $\frac{12}{5}$
- E. $\frac{13}{5}$

4. Ding's Diner advertised this daily lunch special: "Choose 1 item from each column—only \$4.95!" Thus, each daily lunch special consists of a salad, a soup, a sandwich, and a drink.

Salads	Soups	Sandwiches	Drinks
cole slaw	onion	meat loaf	milk
lettuce	tomato	chicken	cola
potato		hamburger	coffee
		ham	tea
		tenderloin	

How many different daily lunch specials are possible?

- F. 4
 - G. 14
 - H. 30
 - J. 120
 - K. 180
5. The volume, V , of the right circular cone with radius r and height h , shown below, can be found using the formula $V = \frac{1}{3}r^2h$. A cone-shaped paper cup has a volume of 142 cubic centimeters and a height of 8.5 centimeters. What is the radius, to the nearest centimeter, of the paper cup?



- A. 2

B. 4

C. 8

D. 12

E. 16

6. A boat departs Port Isabelle, Texas, traveling to an oil rig. The oil rig is located 9 miles east and 12 miles north of the boat's departure point. About how many miles is the oil rig from the departure point?

F. 3

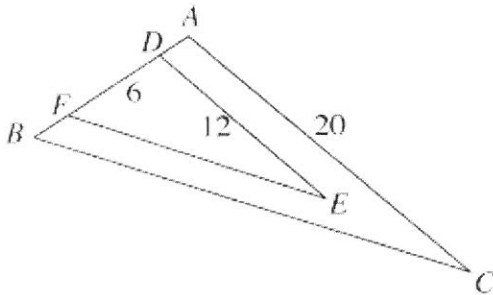
G. $\sqrt{63}$

H. 15

J. 21

K. 225

7. In the figure below, $\angle ABC \cong \angle DFE$, $\angle BAC \cong \angle FDE$, D and F are on \overline{AB} , $\overline{AD} \cong \overline{FB}$, and distances in centimeters are as shown. What is the length of \overline{AD} , in centimeters?



A. 5

B. 4

C. 3

D. 2

E. 1

8. Which of the following is a factor of the polynomial $2x^2 - 3x - 5$?

F. $x - 1$

G. $2x - 3$

H. $2x - 5$

J. $2x + 5$

K. $3x + 5$

9. What is x , the second term in the geometric series $\frac{1}{4} + x + \frac{1}{36} + \frac{1}{108} + \dots$?
(Note: In a geometric series the ratio of any term to the following term is constant.)

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

B. $\frac{1}{9}$

C. $\frac{1}{12}$

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

E. $\frac{1}{18}$

10. What is the slope of any line parallel to the line $9x + 4y = 7$?

F. -9

G. $-\frac{9}{4}$

H. $\frac{9}{7}$

J. 7

K. 9

11. A DVD player with a list price of \$100 is marked down 30%. If John gets an employee discount of 20% off the sale price, how much does John pay for the DVD player ?

A. \$86.00

B. \$77.60

C. \$56.00

D. \$50.00

E. \$44.00

12. $\sqrt{-(-9)^2} = ?$
(Note: $i = \sqrt{-1}$)

F. $9i$

G. $9 + i$

H. $9 - i$

J. 9

K. -9