

Mathematica Centrum

Together, let's shape the mathematicians of the future

Pythagoras | 2018 contest

April 18, 2018

Time: 1h 15 min

Calculators are not permitted

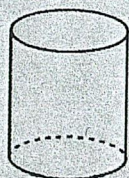
Instructions

1. You must wait for the contest supervisor's signal before starting the contest.
2. You may use scrap paper, a ruler and a compass to do your work.
3. Be sure that you understand the coding system of the response form. If you have any questions, ask the contest supervisor. Verify that you have received the response form with the title **Pythagoras Contest**.
4. This contest is composed of 50 multiple choice questions. Each question is followed by 5 possible answers: A, B, C, D, and E. There is only one correct answer. When you make your choice, record your answer by filling in the appropriate circle.
5. If you change an answer, make sure to erase your first answer completely.
6. Each correct answer is worth one point. Incorrect answers will not be penalised.
7. After the supervisor's signal, you will have exactly 75 minutes to finish. Do not lose time on a specific problem, move on to the next one.
8. When you are finished, give the question booklet and the response form to the contest supervisor

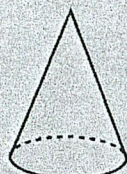
1. $2 + 0 + 1 + 8 = ?$

- A) 9 B) 10 C) 11 D) 12 E) 13

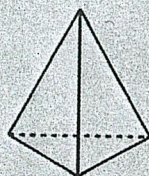
2. Which solid has 6 edges?



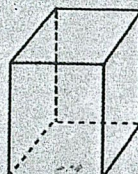
A



B



C



D



E

3. Thirty-four plus twenty-six is equal to

- A) 59 B) 60 C) 61 D) 62 E) 63

4. How many \$6 cereal boxes can you buy with \$20?

- A) 3 B) 5 C) 4 D) 2 E) 6

5. The sum of $1 + 2 + 3 + 4 + 5 + 6$ is a multiple of

- A) 4 B) 6 C) 8 D) 5 E) 7

6. The sum of $X + Y$ in the following equation: $2 + 7 + X + 3 + Y - 2 = 12$ is

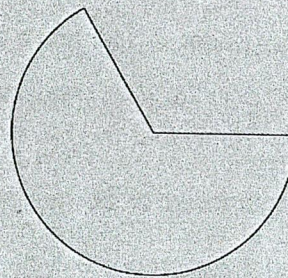
- A) 2 B) 3 C) 1 D) 4 E) 0

7. The quotient of $320 \div 80$ is

- A) 3 B) 40 C) 5
D) 4 E) 6

8. What fraction of the pie has been eaten?

- A) $1/6$ B) $1/5$ C) $1/4$
D) $1/3$ E) $1/2$

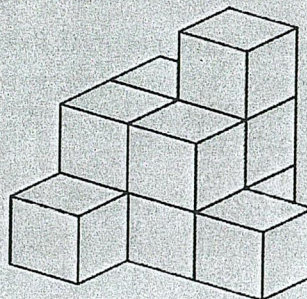


9. The value of the ? in the equation below:
 $10 \text{ quarters} = ? \text{ quarters} + 5 \text{ dimes}$ is

- A) 6 B) 7 C) 8
D) 9 E) 10

10. Which of the following numbers is 4 less than the number that is the double of 4?

- A) 4 B) 8 C) 2
D) 6 E) 0

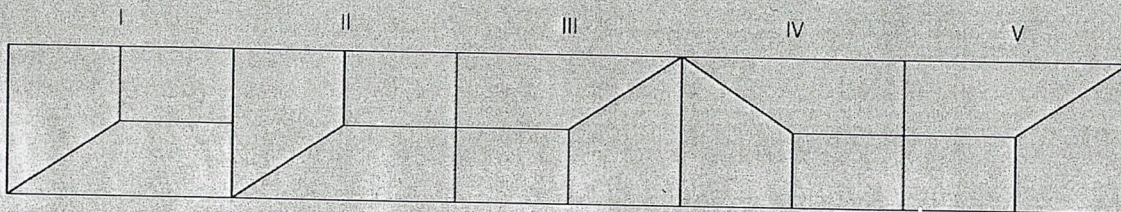


11. How many blocks are there in the pile?

- A) 10 B) 11 C) 12 D) 13 E) 14

12. The next term in the sequence: 2, 3, 5, 8, 12, 17, ... is
- A) 22 B) 20 C) 21 D) 24 E) 23
13. The hundreds digit in the product of 10×15 is
- A) 5 B) 1 C) 3 D) 2 E) 4
14. Mathilda has 5 more books than Mathew. Together, they have 27 books. How many books does Mathew have?
- A) 15 B) 13 C) 16 D) 11 E) 12
15. What is the largest natural number that, when multiplied by 4, yields a result smaller than 80?
- A) 15 B) 16 C) 17 D) 18 E) 19
16. $100 \text{ cm} = ? \text{ dm}$
- A) 5 B) 20 C) 100 D) 10 E) 1

17. Which geometrical transformation did Mathilda use to transform figure III into figure IV?



- A) translation B) rotation of 90° C) reflection D) rotation of 45° E) rotation of 180°
18. 2 hundreds + 2 ones + 2 tens is equal to
- A) 222 B) 224 C) 221 D) 223 E) 225
19. The number of sides plus the number of angles in a pentagon is equal to
- A) 12 B) 11 C) 8 D) 9 E) 10
20. Mathew has 4 chickens and 4 pigs on his property. These 8 animals have a total of
- A) 32 feet B) 24 feet C) 28 feet D) 16 feet E) 20 feet
21. A heart beats 16 times every 15 seconds. How many times will it beat in 2 minutes?
- A) 100 times B) 64 times C) 148 times D) 128 times E) 120 times
22. The time that will pass from a Wednesday at noon to the following Saturday morning at 6 o'clock is
- A) 600 minutes B) 600 seconds C) 60 hours D) 3 days E) 66 hours

23. Matusalem has paid \$40 for glass containers costing \$3 and \$2 each. How many \$3 containers could he have bought?

- A) 10 B) 13
 C) 14 D) 11
 E) 9

24. Mathilda watched 90 minutes of a 3 hour movie. What fraction of the total movie did she watch?

- A) $\frac{3}{4}$ B) $\frac{1}{4}$ C) $\frac{1}{2}$
 D) $\frac{1}{3}$ E) $\frac{2}{5}$

25. A small rectangular carton whose length measures 2 cm is carved out of a 8 cm x 5 cm rectangular carton. What is the perimeter of the carved carton shown in the diagram?

- A) 29 cm B) 30 cm C) 26 cm D) 28 cm E) 27 cm

26. I have 12 edges and my 6 faces are squares. What am I?

- A) cylinder B) cone C) pyramid
 D) cube E) sphere

27. The sum of two consecutive even numbers is 14. What is their product?

- A) 24 B) 35 C) 48
 D) 63 E) 45

28. If the second hand of a clock goes around 60 times, how many times will the minute hand go around?

- A) 10 times B) 1 time C) 20 times
 D) 12 times E) 2 times

29. A bag contains 3 red balls, 2 green balls, and 1 blue ball. If you randomly choose one of these balls, what is the probability that the ball chosen is green?

- A) $\frac{1}{3}$ B) $\frac{1}{6}$ C) $\frac{2}{5}$
 D) $\frac{2}{3}$ E) $\frac{1}{2}$

30. Melissa has used square tiles to completely cover a 80 cm x 90 cm rectangular surface. What is the perimeter of tile Y?

- A) 40 cm B) 30 cm C) 60 cm
 D) 160 cm E) 120 cm

31. The greatest common factor of 3, 5, and 7 is

- A) 1 B) 2 C) 3
 D) 4 E) 5

