

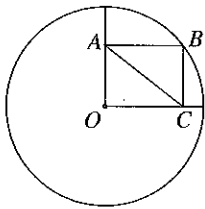
PRACTICE EXERCISES

Multiple-Choice Questions

1. In 1995, Diana read 10 English books and 7 French books. In 1996, she read twice as many French books as English books. If 60% of the books that she read during the 2 years were French, how many English and French books did she read in 1996?

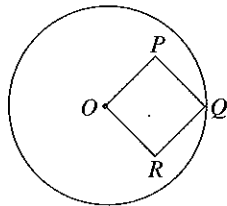
(A) 16
(B) 26
(C) 32
(D) 48

2. In the figure below, if the radius of circle O is 10, what is the length of diagonal \overline{AC} of rectangle $OABC$?



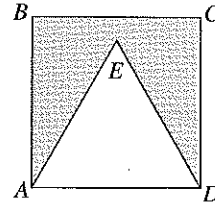
(A) $\sqrt{2}$
(B) $\sqrt{10}$
(C) $5\sqrt{2}$
(D) 10

3. In the figure below, vertex Q of square $OPQR$ is on a circle with center O . If the area of the square is 8, what is the area of the circle?



(A) 8π
(B) $8\pi\sqrt{2}$
(C) 16π
(D) 32π

4. In the figure below, $ABCD$ is a square and AED is an equilateral triangle. If $AB = 2$, what is the area of the shaded region?



(A) $\sqrt{3}$
(B) 2
(C) $4 - 2\sqrt{3}$
(D) $4 - \sqrt{3}$

5. If $5x + 13 = 31$, what is the value of $\sqrt{5x+31}$?

(A) $\sqrt{13}$
(B) $\sqrt{\frac{173}{5}}$
(C) 7
(D) 13

6. At Nat's Nuts a $2\frac{1}{4}$ -pound bag of pistachio nuts costs \$6.00. At this rate, what is the cost, in cents, of a bag weighing 9 ounces?
(Note: 1 pound = 16 ounces)

(A) 24
(B) 150
(C) 1350
(D) 2400

7. If $12a + 3b = 1$ and $7b - 2a = 9$, what is the average (arithmetic mean) of a and b ?

(A) 0.1
(B) 0.5
(C) 1
(D) 2.5

8. Jessica has 4 times as many books as John and 5 times as many as Karen. If Karen has more than 40 books, what is the least number of books that Jessica can have?
- (A) 220
(B) 210
(C) 205
(D) 200
9. What is the largest integer, n , that satisfies the inequality $n^2 + 8n - 3 < n^2 + 7n + 8$?
- (A) 5
(B) 7
(C) 10
(D) 11
10. If $a < b$ and c is the sum of a and b , which of the following is the positive difference between a and b ?
- (A) $2a - c$
(B) $2b - c$
(C) $c - 2b$
(D) $c - a + b$
11. If w widgets cost c cents, how many widgets can you get for d dollars?
- (A) $\frac{100dw}{c}$
(B) $\frac{dw}{100c}$
(C) $\frac{dw}{c}$
(D) cdw
12. If 120% of a is equal to 80% of b , which of the following is equal to $a + b$?
- (A) $1.5a$
(B) $2a$
(C) $2.5a$
(D) $3a$
13. Which of the following numbers can be expressed as the product of three different integers greater than 1?
- I. 25
II. 36
III. 45
- (A) I only
(B) II only
(C) III only
(D) II and III only
14. What is the average of $4y + 3$ and $2y - 1$?
- (A) $3y + 1$
(B) $3y + 2$
(C) $3y + 3$
(D) $3y + 4$
15. If x and y are integers such that $x^3 = y^2$, which of the following CANNOT be the value of y ?
- (A) 1
(B) 8
(C) 16
(D) 27
16. What is a divided by $a\%$ of a ?
- (A) $\frac{a}{100}$
(B) $\frac{100}{a}$
(C) $\frac{a^2}{100}$
(D) $\frac{100}{a^2}$
17. If an object is moving at a speed of 36 kilometers per hour, how many meters does it travel in 1 second?
- (A) 10
(B) 36
(C) 100
(D) 360

18. For what value of x is $8^{2x-4} = 16^x$?

- (A) 2
- (B) 4
- (C) 6
- (D) 8

19. On a certain Russian-American committee, $\frac{2}{3}$

of the members are men, and $\frac{3}{8}$ of the men

are Americans. If $\frac{3}{5}$ of the committee

members are Russians, what fraction of the members are American women?

- (A) $\frac{3}{20}$
- (B) $\frac{11}{60}$
- (C) $\frac{1}{4}$
- (D) $\frac{2}{5}$

20. If $x\%$ of y is 10, what is y ?

- (A) $\frac{10}{x}$
- (B) $\frac{100}{x}$
- (C) $\frac{1000}{x}$
- (D) $\frac{x}{10}$

Grid-in Questions

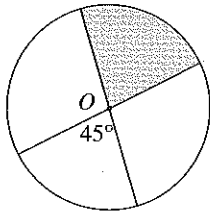
21. In writing all of the integers from 1 to 300, how many times is the digit 1 used?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

22. If $a + 2b = 14$ and $5a + 4b = 16$, what is the average (arithmetic mean) of a and b ?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

23. In the figure below, the area of circle O is 12. What is the area of the shaded sector?



Note: Figure not drawn to scale

	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

25. How many integers between 1 and 1000 are the product of two consecutive integers?

	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

24. At a certain university, $\frac{1}{4}$ of the applicants failed to meet minimum standards and were rejected immediately. Of those who met the standards, $\frac{2}{5}$ were accepted.
- If 1200 applicants were accepted, how many applied?

	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9