

PRACTICE SET

Basic

- Which of the following is less than  $\frac{1}{6}$ ?
  - 0.1667
  - $\frac{3}{18}$
  - 0.167
  - 0.1666
  - $\frac{8}{47}$
- Which of the following lists three fractions in ascending order?
  - $\frac{9}{26}, \frac{1}{4}, \frac{3}{10}$
  - $\frac{9}{26}, \frac{3}{10}, \frac{1}{4}$
  - $\frac{1}{4}, \frac{9}{26}, \frac{3}{10}$
  - $\frac{1}{4}, \frac{3}{10}, \frac{9}{26}$
  - $\frac{3}{10}, \frac{9}{26}, \frac{1}{4}$
- Which of the following is not equal to  $\frac{36}{45}$ ?
  - $\frac{4}{5}$
  - $\frac{12}{15}$
  - $\frac{20}{25}$
  - $\frac{24}{35}$
  - $\frac{48}{60}$

- Which of the following is equal to  $25(27 + 29 + 31)$ ?
  - $25(27 + 29) + 31$
  - $25(27) + 29 + 31$
  - $25(27) + (29 + 31)(25)$
  - $25 + (27)(29)(31)$
  - $25(27 + 29) + 25(29 + 31)$

- $1.04\overline{)0.079} =$ 
  - $10.4\overline{)0.0079}$
  - $104\overline{)0.79}$
  - $10.4\overline{)0.79}$
  - $0.104\overline{)0.79}$
  - $104\overline{)0.0079}$

- $\frac{12}{\frac{1}{4}} =$

Medium

- $\frac{7}{5} \times \left( \frac{3}{7} - \frac{2}{5} \right) =$ 
  - $\frac{1}{165}$
  - $\frac{1}{35}$
  - $\frac{1}{25}$
  - $\frac{9}{15}$
  - 1

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## Basic

- How many odd integers are between  $\frac{10}{3}$  and  $\frac{62}{3}$ ?
  - 19
  - 18
  - 10
  - 9
  - 8
- If the sum of three different prime numbers is an even number, what is the smallest of the three?
  - 2
  - 3
  - 5
  - 7
  - It cannot be determined from the information given.
- If the product of 3 consecutive odd integers is 15, what is the smallest of the three integers?
- What is the number of distinct prime factors of 200?
- If the product of three integers is odd, which of the following must be true?
  - The sum of any two of the integers is even.
  - The product of any two of the integers is even.
  - The sum of the three integers is even.
  - The average (arithmetic mean) of the three integers is even.
  - The median of the three integers is even.
- What is the greatest integer that will divide evenly into both 36 and 54?

## Medium

- If the integer  $P$  leaves a remainder of 4 when divided by 9, all of the following must be true EXCEPT
  - The number that is 4 less than  $P$  is a multiple of 9.
  - The number that is 5 more than  $P$  is a multiple of 9.
  - The number that is 2 more than  $P$  is a multiple of 3.
  - When divided by 3,  $P$  will leave a remainder of 1.
  - When divided by 2,  $P$  will leave a remainder of 1.
- How many three-digit integers can be divided by 2 to produce a new integer with the same tens' digit and units' digit as the original integer?
  - 0
  - 1
  - 2
  - 3
  - 4
- On a number line, point  $B$  is at a distance of 5 from point  $C$ , and point  $D$  is at a distance of 7 from point  $C$ . What is the distance from point  $B$  to point  $D$ ?
  - 2
  - 5
  - 7
  - 12
  - It cannot be determined from the information given.

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- If the average (arithmetic mean) of  $a$  and  $-5$  is 10, then  $a =$   
(A) 25  
(B) 15  
(C) 5  
(D)  $-5$   
(E)  $-15$
- The average (arithmetic mean) of 6 consecutive integers is  $18\frac{1}{2}$ . What is the average of the first 5 of these integers?  
(A)  $12\frac{1}{2}$   
(B) 15  
(C) 16  
(D)  $17\frac{1}{2}$   
(E) 18

NAME	WEIGHT IN POUNDS
Chris	150
Anne	153
Malcolm	154
Paul	157
Sam	151

- What is the average (arithmetic mean) weight of the five people whose weights are listed in the table above?  
(A) 152  
(B) 153  
(C)  $153\frac{1}{2}$   
(D) 154  
(E) 155

- A certain store stocks 5 different brands of ice cream, and sells a pint of each for \$2.75, \$3.25, \$2.50, \$3.25, and \$3.00, respectively. What is the positive difference between the mode price and the median price?  
(A) \$0.05  
(B) \$0.25  
(C) \$0.30  
(D) \$0.50  
(E) \$0.75
- The average (arithmetic mean) of 3 numbers is 45. If 2 of the numbers are 35 and 45, what is the third number?  
(A) 30  
(B) 40  
(C) 45  
(D) 50  
(E) 55
- If the average (arithmetic mean) of  $b$  and 2 is equal to the average of  $b$ , 3, and 4, what is the value of  $b$ ?  
(A) 2  
(B) 4  
(C) 8  
(D) 10  
(E) 16
- The average (arithmetic mean) of 30, 50, and 70 is 15 more than the average of 40, 60, and what number?  
(A) 65  
(B) 55  
(C) 35  
(D) 15  
(E) 5
- A violinist practices 1 hour a day from Monday through Friday. How many hours must she practice on Saturday in order to average 2 hours a day for the 6-day period?

## PRACTICE SET

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- A subway car passes 3 stations every 10 minutes. At this rate, how many stations will it pass in 1 hour?  
(A) 2  
(B) 12  
(C) 15  
(D) 18  
(E) 30
- On a certain street map,  $\frac{3}{4}$  inch represents one mile. What distance, in miles, is represented by  $1\frac{3}{4}$  inches?  
(A)  $1\frac{1}{2}$   
(B)  $1\frac{3}{4}$   
(C)  $2\frac{1}{3}$   
(D)  $2\frac{1}{2}$   
(E)  $5\frac{1}{4}$
- The Greenpoint factory produced  $\frac{2}{5}$  of the Consolidated Brick Company's bricks in 1991. If the Greenpoint factory produced 1,400 tons of bricks in 1991, what was the Consolidated Brick Company's total output that year, in tons?  
(A) 700  
(B) 2,100  
(C) 2,800  
(D) 3,500  
(E) 7,000
- The ratio of  $3\frac{1}{4}$  to  $5\frac{1}{4}$  is equivalent to the ratio of  
(A) 3 to 5  
(B) 13 to 21  
(C) 5 to 7  
(D) 7 to 5  
(E) 5 to 3
- If a car travels  $\frac{1}{100}$  of a kilometer each second, how many kilometers does it travel per hour?  
(A)  $\frac{3}{5}$   
(B)  $3\frac{3}{5}$   
(C) 36  
(D) 72  
(E) 100
- Fred can vacuum 144 square feet of carpet in 5 minutes. At this rate, how long would it take him to vacuum 2,880 square feet of carpet?  
(A) 20 minutes  
(B) 40 minutes  
(C) 50 minutes  
(D) 100 minutes  
(E) 140 minutes
- A printing press produces 4,440 posters per hour. At this rate, in how many minutes can the printing press produce 370 posters?  
(A) 0.12  
(B) 5  
(C) 12  
(D) 50  
(E) 720

## PRACTICE SET

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- $2^4 \times 4^3 =$ 
  - $8^{12}$
  - $8^7$
  - $6^7$
  - $2^{10}$
  - $2^7$
- $6\sqrt{9} \times 2\sqrt{16} =$ 
  - 72
  - 144
  - 288
  - 864
  - 1,728
- If  $x = 9a^2$  and  $a > 0$ , then  $\sqrt{x} =$ 
  - $-3a$
  - $3a$
  - $9a$
  - $3a^2$
  - $81a^4$
- Which of the following is NOT equal to 0.0675?
  - $67.5 \times 10^{-3}$
  - $6.75 \times 10^{-2}$
  - $0.675 \times 10^{-1}$
  - $0.00675 \times 10^2$
  - $0.0000675 \times 10^3$
- If  $x^{-3} = 27$ ,  $x =$ 
  - 3
  - $-\frac{1}{3}$
  - $\frac{1}{3}$
  - 3
  - 9
- If  $n^{-4} = \frac{1}{28,561}$ , what is the value of  $n$ ?
  - $\frac{1}{169}$
  - $-\frac{1}{13}$
  - $\frac{1}{28,561}$
  - $\frac{1}{13}$
  - 13
- If  $m^{\frac{3}{2}} = 8$ , what is the value of  $m$ ?
  - 2
  - 4
  - 6
  - 10
  - $16\sqrt{2}$
- $\frac{4^3 - 4^2}{2^2} =$

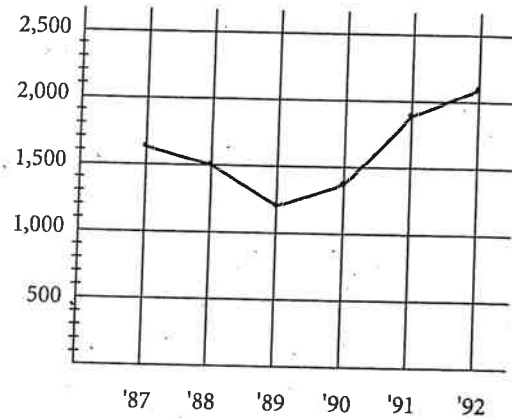
PRACTICE SET

Basic

Questions 1 and 2 refer to the following table.

LUNCHEON SPECIALS	
MEAL	PRICE
Hamburger	\$3.00
Chicken	\$2.75
Tuna Salad	\$2.50
Pasta Salad	\$2.25
Pizza	\$1.50

ANNUAL APPLICATIONS TO COLLEGE W  
1987-1992



- If the table above represents the luncheon prices at a certain cafeteria, what is the average (arithmetic mean) price for a meal at this cafeteria?

(A) \$2.40  
(B) \$2.50  
(C) \$2.60  
(D) \$2.70  
(E) \$2.80
- If three people each ordered a different meal, which of the following could not be the total cost of the meals, excluding tax?

(A) \$7.50  
(B) \$7.00  
(C) \$6.75  
(D) \$6.25  
(E) \$6.00
- The graph above represents the number of applications submitted to College W each year for a 6-year period. If applications increase by approximately the same percent from 1992 to 1993 as they decreased from 1988 to 1989, approximately how many applications will College W receive in 1993?

(A) 2,100  
(B) 2,300  
(C) 2,520  
(D) 2,625  
(E) 2,800

## PRACTICE SET

## Basic

- If  $x = -3$ , what is the value of the expression  $x^2 + 3x + 3$ ?  
(A) -21  
(B) -15  
(C) -6  
(D) 3  
(E) 21
- Let  $\langle\langle x \rangle\rangle = 2x - 1$  for all positive integers. If  $\langle\langle x \rangle\rangle = 15$ , then  $x =$   
(A) 6  
(B) 7  
(C) 8  
(D) 15  
(E) 16
- $5z^2 - 5z + 4 - z(3z - 4) =$   
(A)  $2z^2 - z + 4$   
(B)  $2z^2 - 9z + 4$   
(C)  $5z^2 - 8z + 8$   
(D)  $5z^2 - 8z$   
(E)  $2z^2 - 5z$
- If  $a = 2$ ,  $b = -1$ , and  $c = 1$ , which of the following must be true?  
I.  $a + b + c = 2$   
II.  $2a + bc = 4$   
III.  $4a - b + c = 8$   
(A) I only  
(B) III only  
(C) I and II only  
(D) I and III only  
(E) I, II, and III

- If  $y \neq z$ , then  $\frac{xy - zx}{z - y} =$   
(A)  $x$   
(B) 1  
(C) 0  
(D) -1  
(E)  $-x$
- For any number  $w$ , let  $\# w \#$  be defined by the equation  $\# w \# = -[w^2(w - 1)]$ . What is the value of  $\# -1 \#$ ?  
(A) -2  
(B) -1  
(C) 0  
(D) 1  
(E) 2
- If  $3 + x = 8$ , what is the value of  $5x$ ?
- If  $2(x - 40) = 3(x - 30)$ , what is the value of  $x$ ?
- If  $a = -1$  and  $b = -2$ , then  $2a^2 - 2ab + b^2 =$
- If  $\frac{3}{a} = \frac{5}{4}$ , what is the value of  $a$ ?
- If  $q \times 34 \times 36 \times 38 = 17 \times 18 \times 19$ , then  $q =$

## Medium

- Which of the following is equivalent to  $3x^2 + 18x + 27$ ?  
(A)  $3(x^2 + 6x + 3)$   
(B)  $3(x + 3)(x + 6)$   
(C)  $3(x + 3)(x + 3)$   
(D)  $3x(x + 6 + 9)$   
(E)  $3x^2 + x(18 + 27)$

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- If  $a < b$  and  $b < c$ , which of the following must be true?
  - $b + c < 2a$
  - $a + b < c$
  - $a - b < b - c$
  - $a + b < 2c$
  - $a + c < 2b$
- If  $13 + a = 25 + b$ , then  $b - a =$ 
  - 38
  - 12
  - 8
  - 12
  - 38
- If  $m > 1$  and  $mn - 3 = 3 - n$ , then  $n =$ 
  - 6
  - $\frac{6}{m+1}$
  - $\frac{6}{m-1}$
  - $\frac{6}{1-m}$
  - $-\frac{6}{m+1}$
- If  $r \neq -s$  and  $a = \frac{r-s}{r+s}$ , then  $a + 1 =$ 
  - $\frac{2r}{r+s}$
  - $\frac{r-s+1}{r+s}$
  - $\frac{2r-2s}{r+s}$
  - $\frac{2s}{r+s}$
  - $\frac{1-r+s}{r+s}$

- If  $a > b > c$ , which of the following cannot be true?
  - $b + c < a$
  - $2a > b + c$
  - $2c > a + b$
  - $ab > bc$
  - $a + b > 2b + c$

- If  $|a - b| > 0$ , which of the following CANNOT be true?
  - $a > b$
  - $a < b$
  - $a = b$

- I only
- II only
- III only
- I and III only
- II and III only

- If  $3m < 48$  and  $2m > 24$ , what is a possible value for  $m$ ?
- If  $y^2 + cy - 35 = 0$  and  $-7$  is one solution of the equation, what is the value of  $c$ ?

Medium

- If  $a + b = 6$ ,  $b + c = -3$ , and  $a + c = 5$ , what is the value of  $a + b + c$ ?
- If  $a < b < c < 0$ , which of the following expressions is the greatest?
  - $\frac{a}{b}$
  - $\frac{b}{c}$
  - $\frac{c}{a}$
  - $\frac{a}{c}$
- It cannot be determined from the information given.

## PRACTICE SET

## Basic

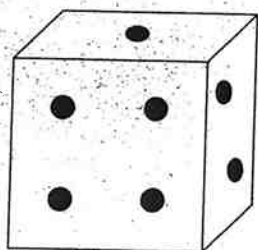
- Before the market opens on Monday, a stock is priced at \$25. If its price decreases \$4 on Monday, increases \$6 on Tuesday, and then decreases \$2 on Wednesday, what is the final price of the stock on Wednesday?
  - \$12
  - \$21
  - \$25
  - \$29
  - \$37
- If three times  $x$  is equal to  $x$  decreased by 2, then  $x$  is
  - 2
  - 1
  - $-\frac{2}{3}$
  - 1
  - $\frac{3}{2}$
- Greg's weekly salary is \$70 less than Joan's, which is \$50 more than Sue's. If Sue earns \$280 per week, how much does Greg earn per week?
  - \$160
  - \$260
  - \$280
  - \$300
  - \$400
- If the sum of  $a$ ,  $b$ , and  $c$  is twice the sum of  $a$  minus  $b$  and  $a$  minus  $c$ , then  $a =$ 
  - $b + c$
  - $3b + 3c$
  - $3b - c$
  - $2b + 3c$
  - $-b - c$
- During a certain week, a post office sold \$280 worth of 14-cent stamps. How many of these stamps did they sell?
  - 20
  - 2,000
  - 3,900
  - 20,000
  - 39,200
- Diane painted  $\frac{1}{3}$  of her room with  $2\frac{1}{2}$  cans of paint. How many more cans of paint will she need to finish painting her room?
  - 5
  - $7\frac{1}{2}$
  - 10
  - $12\frac{1}{2}$
  - 15
- Liza took  $5n$  photographs on a certain trip. If she gives  $n$  photographs to each of her 3 friends, how many photographs will she have left?
  - $2n$
  - $3n$
  - $4n - 3$
  - $4n$
  - $4n + 3$

PRACTICE SET

Basic

1. Team X and Team Y have a tug of war. From their starting positions Team X pulls Team Y forward 3 meters, and Team X is then pulled forward 5 meters. Team Y then pulls Team X forward 2 meters. If the first team to be pulled forward 10 meters loses, how many more meters must Team Y pull Team X forward to win?

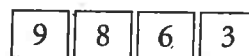
- (A) 0
- (B) 4
- (C) 6
- (D) 8
- (E) 14



2. On the face of a regular die, the dots are arranged in such a way that the total number of dots on any 2 opposite faces is 7. If the figure above shows a regular die, what is the total number of dots on the faces that are not shown?
- (A) 7
  - (B) 9
  - (C) 12
  - (D) 13
  - (E) 14
3. Out of 40 sandwiches, 19 are turkey, 9 are bologna, and the rest are tuna fish. If one sandwich is randomly picked, what is the probability of picking a tuna fish sandwich?

4. Achmed finds that by wearing different combinations of the jackets, shirts, and pairs of trousers that he owns, he can make up 90 different outfits. If he owns 5 jackets and 3 pairs of trousers, how many shirts does he own?

- (A) 3
- (B) 6
- (C) 12
- (D) 18
- (E) 30



5. The figure above shows an example of a 4-digit identification code used by a certain bank for its customers. If the digits in the code must appear in descending numerical order and no digit can be used more than once, what is the difference between the largest and the smallest possible codes?

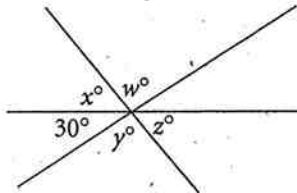
- (A) 6,666
- (B) 5,555
- (C) 5,432
- (D) 4,444
- (E) 1,110

6. Bill purchased an item and received no change. Before the purchase, he had only a \$5 bill, two \$10 bills, and a \$20 dollar bill. How many distinct possibilities were there for the total amount of his purchase?

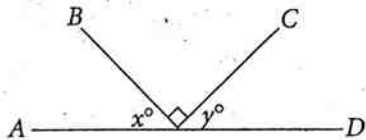
- (A) 3
- (B) 4
- (C) 6
- (D) 9
- (E) 10

PRACTICE SET

Basic



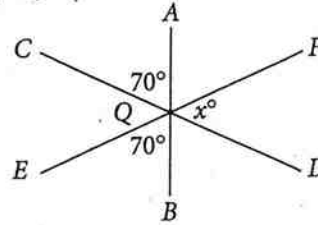
1. In the figure above,  $w + x + y + z =$
- (A) 330
  - (B) 300
  - (C) 270
  - (D) 240
  - (E) 210



2. In the figure above, what is the value of  $x + y$ ?
- (A) 30
  - (B) 60
  - (C) 90
  - (D) 110
  - (E) It cannot be determined from the information given.

3. If  $Y$  is the midpoint of line segment  $XZ$ , then which of the following is true?
- (A)  $XY < YZ$
  - (B)  $YZ < XY$
  - (C)  $XZ < YZ$
  - (D)  $\frac{1}{2}XZ = 2XY$
  - (E)  $2YZ = XZ$

Medium



Note: Figure not drawn to scale.

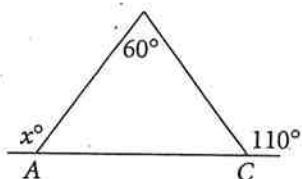
4. In the figure above,  $\overline{AB}$ ,  $\overline{CD}$ , and  $\overline{EF}$  all intersect at point  $Q$ . What is the value of  $x$ ?
- (A) 30
  - (B) 40
  - (C) 50
  - (D) 60
  - (E) 70



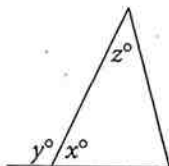
5. In  $\overline{PS}$  above,  $PQ = 3$ ,  $RS = 4$ , and  $PS = 10$ . What is the distance from  $S$  to the midpoint of  $\overline{QR}$ ?
- (A) 4.5
  - (B) 5.5
  - (C) 6
  - (D) 6.5
  - (E) 7

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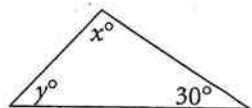


1. In the figure above,  $x =$



2. In the figure above,  $x = 2z$  and  $y = 3z$ . What is the value of  $z$ ?

- (A) 24
- (B) 30
- (C) 36
- (D) 54
- (E) 60

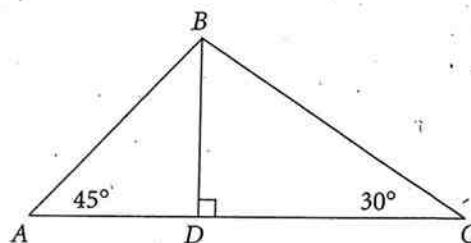


3. In the figure above, what is  $x$  in terms of  $y$ ?

- (A)  $150 - y$
- (B)  $150 + y$
- (C)  $80 + y$
- (D)  $30 + y$
- (E)  $30 - y$

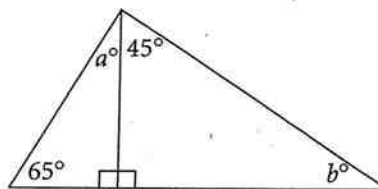
4. The angles of a triangle are in the ratio of 2:3:4. What is the degree measure of the largest angle?

- (A) 40
- (B) 80
- (C) 90
- (D) 120
- (E) 150



5. In the figure above, if  $AB = 2$ , what is the length of  $BC$ ?

- (A)  $\sqrt{2}$
- (B) 2
- (C)  $2\sqrt{2}$
- (D) 3
- (E)  $\sqrt{6}$



Note: Figure not drawn to scale.

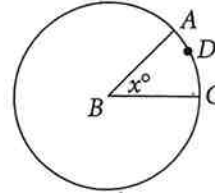
6. In the figure above, what is the value of  $a + b$ ?

- (A) 45
- (B) 70
- (C) 90
- (D) 145
- (E) 170

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## Basic

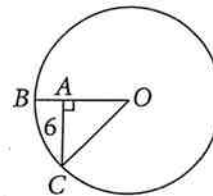
1. If the area of a circle is  $64\pi$ , then the circumference of the circle is
  - (A)  $8\pi$
  - (B)  $16\pi$
  - (C)  $32\pi$
  - (D)  $64\pi$
  - (E)  $128\pi$
2. If  $d$  is the diameter of a circle, then  $\pi d^2$  represents
  - (A) the area of the circle
  - (B) half the area of the circle
  - (C) twice the area of the circle
  - (D) one-fourth the area of the circle
  - (E) four times the area of the circle
3. If the minute hand of a clock moves 45 degrees, how many minutes of time have passed?
  - (A) 6
  - (B) 7.5
  - (C) 15
  - (D) 30
  - (E) 36.5
4. If the circumference of a circle is 1, what is the radius of the circle?
  - (A)  $\frac{1}{2\pi}$
  - (B)  $\frac{1}{\pi}$
  - (C)  $\frac{1}{2}$
  - (D)  $\frac{\pi}{2}$
  - (E)  $\pi$



Note: Figure not drawn to scale.

5. In the figure above, the ratio of the circumference of circle  $B$  to the length of arc  $ADC$  is 8:1. What is the value of  $x$ ?

## Medium

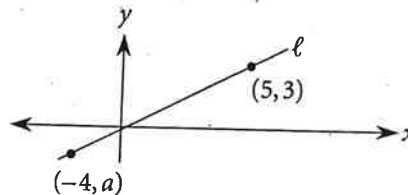
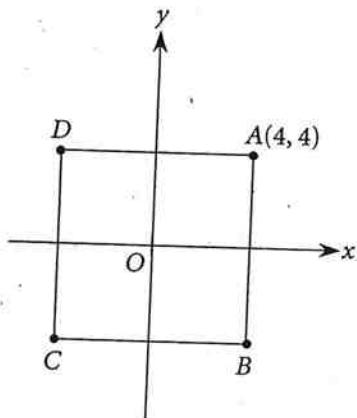


Note: Figure not drawn to scale.

6. In the figure above, if the area of the circle with center  $O$  is  $100\pi$  and  $CA$  has a length of 6, what is the length of  $AB$ ?
  - (A) 2
  - (B) 3
  - (C) 4
  - (D) 5
  - (E) 6

PRACTICE SET

Basic



- In the figure above,  $ABCD$  is a square centered at the origin. If the coordinates of vertex  $A$  are  $(4, 4)$ , what are the coordinates of vertex  $C$ ?
  - $(-4\sqrt{2}, -4\sqrt{2})$
  - $(-4\sqrt{2}, -4)$
  - $(-4, -4)$
  - $(-4, 4)$
  - $(4, -4)$
- If point  $A$  has coordinates  $(1, 2)$  and point  $B$  has coordinates  $(9, 8)$ , what is the distance between points  $A$  and  $B$ ?
  - 10
  - 9
  - 8
  - 7
  - 6
- In the above figure, if the slope of line  $l$  is  $\frac{4}{9}$ , what is the value of  $a$ ?
  - 3
  - 2
  - 1
  - 1
  - 2
- Points  $P$  and  $Q$  lie on the same line and have coordinates  $(1, 3)$  and  $(5, 8)$ , respectively. Which of the following points lies on the same line as points  $P$  and  $Q$ ?
  - $(-4, -5)$
  - $(-3, -2)$
  - $(-2, -3)$
  - $(-1, -4)$
  - $(0, -1)$
- If point  $P$  is at  $(4, 5)$  and point  $Q$  is at  $(2, 9)$ , what is the midpoint of  $PQ$ ?
  - $(2, 5)$
  - $(2, 7)$
  - $(3, 7)$
  - $(3, 9)$
  - $(4, 9)$
- What is the slope of the line in the coordinate plane containing the points  $(3, 8)$  and  $(9, 10)$ ?
  - $\frac{1}{3}$
  - $\frac{2}{3}$
  - $\frac{1}{2}$
  - $\frac{2}{9}$
  - $\frac{1}{9}$