MATHS

BOOKS - INDEPENDENTLY PUBLISHED MATHS (ENGLISH)

PRACTICE TEST 4 - MATHEMATICS TEST

Exercise

1. The top surface of a rectangular table has an area of 100 square feet and a width of 5 feet.

What is the length, in feet, of the surface?

A. 10

B. 15

C. 20

D. 95

Answer: C

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2. A wallet containing 2 five-dollar bills, 9 ten-dollar bills, and 5 twenty-dollar bills is found and returned to its owner. The wallet's owner. The wallet's owner will reward the finder with 1 bill drawn randomly from the wallet. What is the probability that the bill drawn will be a twenty-dollar bill?

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

B. $\frac{1}{10}$

C. $\frac{1}{5}$

D. $\frac{5}{16}$

Answer: D

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3. In his costume supplies. Elmo the clown has 4 noses, 3 pair of lips, and 2 wigs. A clown costume consists of 1 nose, 1 pair of lips, and 1 wig. How many different clown costume can Elmo make?

A. 3

B. 9

C. 12

D. 24

Answer: D

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4. Esteben and his family are making care packages to send to children at summer camp. Each complete car package contains 5 pens, 2 notebooks, 3 envelopes, 12 cookies, and 5

candy bars. Esteban and his family have already made 7 complete care packages and the following materials remain:

3 boxes of pens (10 pens per box)

4 boxes of notebooks (5 notebooks per box)

2 boxes of envelopes (12 envolopes per box)

84 cookies

$4\frac{1}{2}$ boxes of candy bars (10 candy bars per box)

How many additional complete care packages can Esteban and his family make with the remaining materials?

A. 6

B. 7

C. 8

D. 10

Answer: A

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5. A formula for the volume of a right circular cone is $V = \frac{1}{3}\pi r^2 h$, where r is the radius of the base and h is the height of the cone. Using

$\frac{22}{7}$ as an approximate value for π, which of the following values is closest to the volume, in cubic inches, of a cone with height 28 inches and radius 6 inches?

A. 264

B. 352

C. 1056

D. 4224

Answer: C

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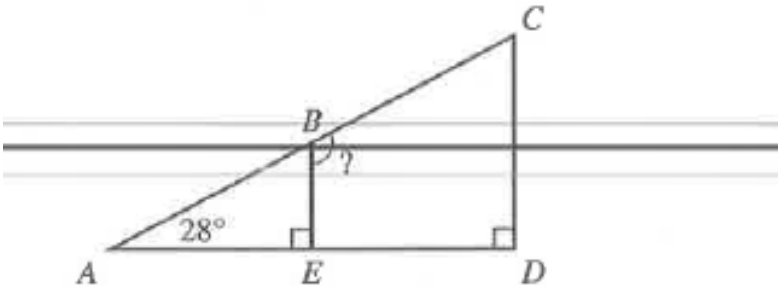
6. In $\triangle ACD$ below, B is on $\overline{AC}$, E is on $\overline{AD}$, the measure of $\angle CAD$ is 28°, and $\overline{AD}$ is perpendicular to both $\overline{BE}$ and $\overline{CD}$. What is the measure of $\angle CBE$?



A. 104°

B. 118°

C. 124°

D. 146°

Answer: B

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7. What is the sum of $0.1x^2 + 3x + 80$ and $0.5x^2 - 2x + 60$ for all x?

A. $-0.4x^2 + 5x + 20$

B. $0.6x^2 + x + 140$

C. $0.6x^2 + 5x + 140$

D. $x^2 + 5x + 140$

Answer: B

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8. Student studying motion observed a cart rolling at a constant rate along a striaght line. The table below gives the distance, d feet, the cart was from a reference point at 1-second intervals from t = 0 seconds to r = 5 seconds.

t	0	1	2	3	4	5
d	15	18	21	24	27	30

Which of the following equations represents this relationship between d and t?

A. $d = t + 15$

B. $d = 3t + 12$

C. $d = 3t + 15$

D. $d = 15t + 3$

Answer: C

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9. Dimitry bought a pair of pants at the discounted price of $30. The original price of the pants was $40. What was the percent of the discount?

A. 0.04

B. 0.1

C. 0.25

D. $33\frac{1}{3}\%$

Answer: C

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10. What is the value of $|-6|-|7-41|$?

A. -40

B. -28

C. 28

D. 40

Answer: B

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11. Samantha, Nyla, and Jerry own shares of stock in the Triumph Hotels company. The shares of stock that they own have a combined value of $6,880. Samantha owns 70 shares, Nyla owns 50 shares, and Jerry owns 40 shares. What is the value of the shares Samantha owns?

A. $ 98

B. $ 301

C. $3,010

D. $4,816

Answer: C

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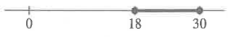
12. A new club wants to attract customers who are at least 18 but less than 30 years of age. One of the number lines below illustrates the range of ages, in years, of the customers the club wants to attract. Which number line is it?

A. 

B. 

C. 

D. 

Answer: A,B

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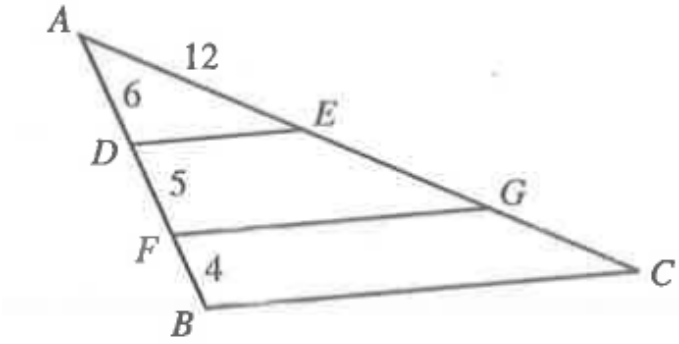
13. In the figure shown below, E and G lie on $\overline{AC}$, D and F lie on $\overline{AB}$, $\overline{DE}$ and $\overline{FG}$ are parallel to $\overline{BC}$, and the given lengths are in

feet. What is the length of $\overline{AC}$, in feet?



A. 9

B. 18

C. 21

D. 30

Answer: D

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14. Which of the following integers is closest to $\frac{\sqrt{50}}{2}$?

A. 3

B. 4

C. 5

D. 13

Answer: B

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15. The ratio of Jane's age to her daughter's age is 9:2. The sum of their ages is 44. How old is Jane?

A. 22

B. 33

C. 35

D. 36

Answer: D

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16. For the next school year, a college will use $\frac{1}{9}$ of the money in its operating budget for library books and $\frac{1}{6}$ of the money in its operating budget for scholarships. What fraction of the operating budget remains for other uses?

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

B. $\frac{5}{18}$

C. $\frac{13}{18}$

D. $\frac{20}{27}$

Answer: C

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17. What value of x makes the proportion below true?

$$\frac{10}{10+x} = \frac{35}{42}$$

A. 2

B. 7

C. 12

D. 17

Answer: A

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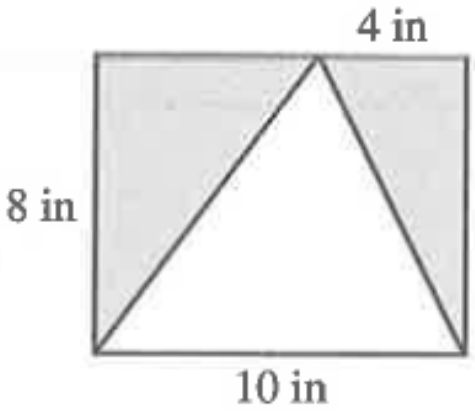
18. The rectangle shown in the figure below is partitioned into 3 triangles, 2 of which are shaded. What is the total area, in square inches, of the 2 shaded regions?



A. 20

B. 24

C. 32

D. 40

Answer: D

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19. Which of the following ordered pairs in the standard (x,y) coordinate plane satisfies the system of inequalities below?

$x > 2$

$y > 0$

$x + y < 5$

A. (1,3)

B. (2,2)

C. (3,1)

D. (3,2)

Answer: C

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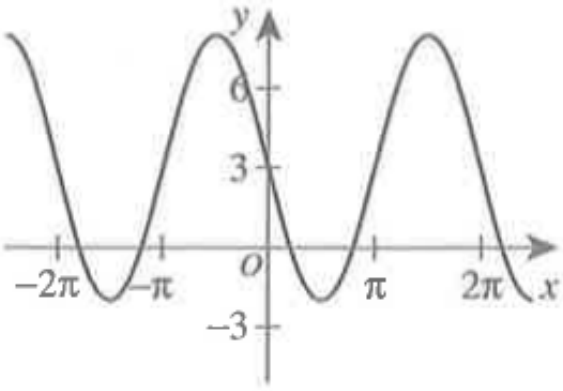
20. The graph of $y = 3 - 5\sin(x - \pi)$ is shown in the standard (x,y) coordinate plane below. What is the range of y?



A. $-5 \leq y \leq 5$

B. $-2 \leq y \leq 2$

C. $-2 \leq y \leq 8$

D. $3 \leq y \leq 8$

Answer: C

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21. Given functions $f(x) = 2x + 1$ and $g(x) = x^2 - 4$, what is the value of $f(g(-3))$?

A. -29

B. -25

C. -19

D. 11

Answer: D

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22. A fabric store sells flannel and calico fabrics. Joan pays $25 for 3 yards of flannel and 4 yards of calico. Chris pays $11 for 1 yard of flannel and 2 yards of calico. What is the price of 1 yard of calico?

A. $3

B. $4

C. $5

D. $6

Answer: B

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23. The scores given below were earned by 10 students on a recent biological test. What is the median score?

71, 94, 86, 77, 88, 94, 88, 80, 78,94

A. 85

B. 86

C. 87

D. 88

Answer: D

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24. A parallelogram has a perimeter of 84 inches, and 1 of its sides measures 16 inches. If

it can be determined, what are the lengths, in inches, of the other 3 sides.

A. 16,16,36

B. 16,18,18

C. 16,26,26

D. 16,34,34

Answer: C

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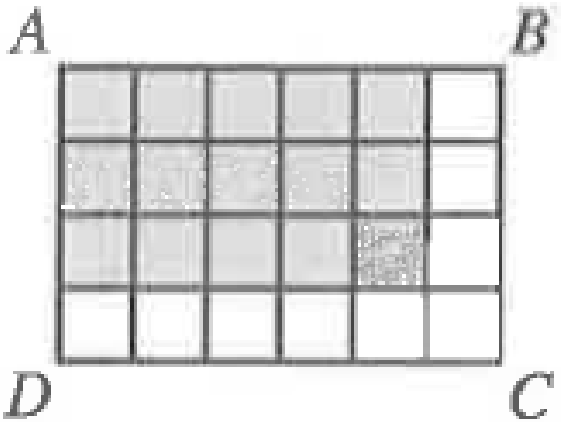
25. In the figure below, all of the small square are equal in area, and the area of rectangle ABCD is 1 square unit. Which of the following expressions represents the area, in square units, of the shaded region?



A. $\frac{1}{6} \cdot \frac{1}{4}$

B. $\frac{1}{6} \cdot \frac{3}{4}$

C. $\frac{1}{6} \cdot \frac{5}{6}$

D. $\frac{5}{6} \cdot \frac{3}{4}$

Answer: D

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26. A bag contains 16 red marbles, 7 yellow marbles, and 19 green marbles. How many additional red marbles must be added to the 42 marbles already in the bag so that

probability of randomly drawing a red marble is $\frac{3}{5}$?

A. 18

B. 23

C. 37

D. 42

Answer: B

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27. For all a > 0, which of the following expression is equal to a^{-2}?

A. $-2a$

B. $-a^2$

C. $\frac{1}{2a}$

D. $\frac{1}{a^2}$

Answer: D

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28. Jamie claims, "If a triangle is in Set A, then it is not isosceles." Later, Jamie discovers that $\triangle MNP$ is a counter example proving this claim false. Which of the following statements must be true about $\triangle MNP$?

A. It is isosceles and in Set A

B. It is scalene and in Set A.

C. It is obtuse and not in Set A.

D. It is scalene and not in Set A.

Answer: A

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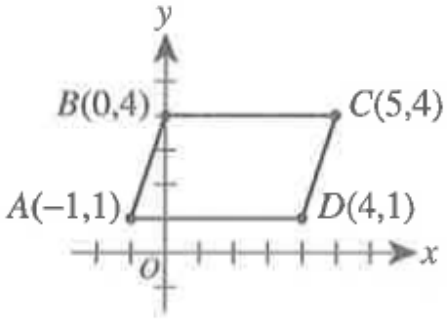
29. Parallelogram ABCD is graphed in the standard (x,y) coordinate plane below. Sides $\overline{AB}$ and $\overline{CD}$ are each $\sqrt{10}$ coordinate units long. Sides $\overline{AD}$ and $\overline{BC}$ are each 5 coordinate unit long. The distance between $\overline{AD}$ and $\overline{BC}$ is 3 coordinate units.



What is the area, in square coordinate units, of ABCD ?

A. 5

B. 7.5

C. 10

D. 15

Answer: D

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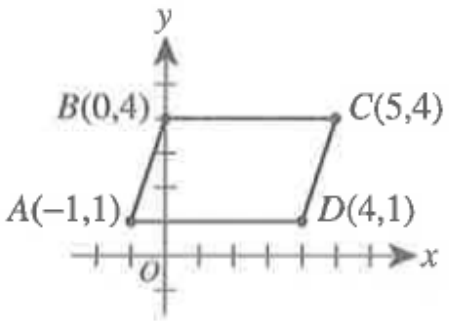
30. Parallelogram ABCD is graphed in the standard (x,y) coordinate plane below. Sides $\overline{AB}$ and $\overline{CD}$ are each $\sqrt{10}$ coordinate units long. Sides $\overline{AD}$ and $\overline{BC}$ are each 5 coordinate unit long. The distance between $\overline{AD}$ and $\overline{BC}$ is 3 coordinate units.



What is the distance, in coordinate units, from B to D?

A. 3

B. 4

C. 5

D. 7

Answer: C

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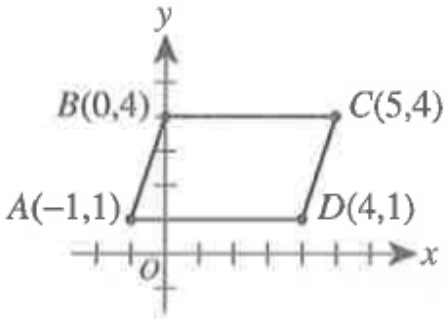
31. Parallelogram ABCD is graphed in the standard (x,y) coordinate plane below. Sides $\overline{AB}$ and $\overline{CD}$ are each $\sqrt{10}$ coordinate units

long. Sides $\overline{AD}$ and $\overline{BC}$ are each 5 coordinate unit long. The distance between $\overline{AD}$ and $\overline{BC}$ is 3 coordinate units.



What is the slope of $BC^{\leftrightarrow}$?

A. 0

B. 1

C. 4

D. 5

Answer: A

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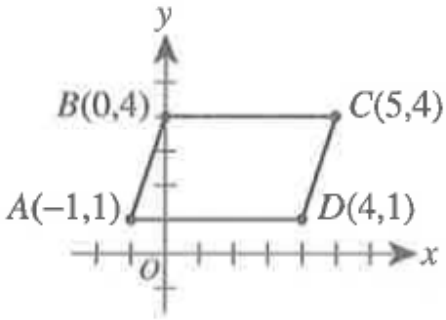
32. Parallelogram ABCD is graphed in the standard (x,y) coordinate plane below. Sides $\overline{AB}$ and $\overline{CD}$ are each $\sqrt{10}$ coordinate units long. Sides $\overline{AD}$ and $\overline{BC}$ are each 5 coordinate unit long. The distance between $\overline{AD}$ and $\overline{BC}$ is 3 coordinate units.



Parallelogram ABCD will be reflected over the y-axis. what will be the coordinates of the image of A?

A. (-4, 1)

B. (-1, -1)

C. (1, -1)

D. (1,1)

Answer: D

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33. Which of the following is equivalent to $8^2 \cdot 4^{0.5}$?

A. 2^7

B. $4^{4.5}$

C. $8^{2.5}$

D. 16^2

Answer: A

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34. A school admissions office accepts 2 out of every 7 applicants. Given that the school accepted 630 student. How many applicants were NOT accepted?

A. 140

B. 180

C. 490

D. 1575

Answer: D

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35. What is the value of $\log_2 \sqrt{8}$?

A. $\frac{1}{2}$

B. $\frac{3}{2}$

C. $\sqrt{2}$

D. 1

Answer: B

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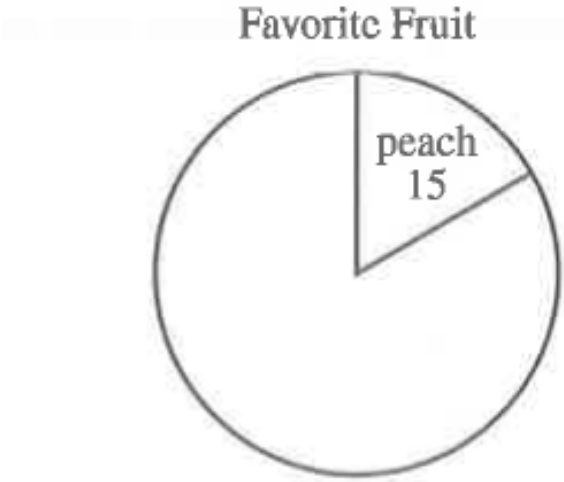
36. Jie asked 90 students to choose 1 favourite fruit from 4 options. Jie has begun to represent the results in the circle graph below. Peaches were chosen as the favourite of 15 students. Apples, bananas, and strawberries were each chosen as favourite by an equal number of the remaining students. What must be the measure of the central angle in the

circle graph for banana?



A. 100°

B. 102°

C. 105°

D. 112.5°

Answer: A

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37. For all real number x such that $x \neq 0, \frac{4}{5} + \frac{7}{x} = ?$

A. $\frac{11}{5x}$

B. $\frac{28}{5x}$

C. $\frac{11}{5+x}$

D. $\frac{4x+35}{5x}$

Answer: D

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38. The Harrisburg Recreation Center recently changed its hours to open 1 hour later and close 3 hours later than it had previously. Residents of Harrisburg age 16 or older were given a survey and 560 residents replied. The survey asked each resident his or her student status (high school, college, or nonstudent) and what he or she thought about the change in hour (approve, disapprove, or no opinion). The results are summarized in the table below.

Student status	Approve	Disapprove	No opinion
High school	30	4	11
College	14	10	6
Nonstudent	85	353	47
Total	129	367	64

What fraction of these nonstudent resisdents replied they disapproved of the change in hours?

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

B. $\frac{4}{45}$

C. $\frac{14}{75}$

D. $\frac{353}{485}$

Answer: D

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39. The Harrisburg Recreation Center recently changed its hours to open 1 hour later and close 3 hours later than it had previously. Residents of Harrisburg age 16 or older were given a survey and 560 residents replied. The survey asked each resident his or her student status (high school, college, or nonstudent) and what he or she thought about the change in hour (approve, disapprove, or no opinion). The results are summarized in the table below.

Student status	Approve	Disapprove	No opinion
High school	30	4	11
College	14	10	6
Nonstudent	85	353	47
Total	129	367	64

Suppose a person will be chosen at random from these 560 residents. Which of the following values is closest to the probability that the person chosen will NOT be a high student and will NOT have replied with no opinion?

A. 0.06

B. 0.09

C. 0.44

D. 0.83

Answer: D

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40. The Harrisburg Recreation Center recently changed its hours to open 1 hour later and close 3 hours later than it had previously. Residents of Harrisburg age 16 or older were given a survey and 560 residents replied. The survey asked each resident his or her student

status (high school, college, or nonstudent) and what he or she thought about the change in hour (approve, disapprove, or no opinion). The results are summarized in the table below.

Student status	Approve	Disapprove	No opinion
High school	30	4	11
College	14	10	6
Nonstudent	85	353	47
Total	129	367	64

After constructing the table, it was discovered that the student status of 15 residents who replied that they approved had been incorrectly classified as nonstudents. After correcting the errors, exactly 60% of the college students had replied that they

approved. To the nearest 1%, what percent of high school students replied that they approved?

A. 0.6

B. 0.67

C. 0.7

D. 0.75

Answer: C

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41. Set A and Set B each consist of 5 distinct numbers. The 2 sets contain identical numbers with the exception of the number with the least value in each set. The number with the least value in Set B is greater than the number with the least value in Set A. The value of which of the following measures must be greater for Set B than for Set Δ?

A. Mean only

B. Median only

C. Mode only

D. Mean and median only

Answer: A

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42. For all x such that $0 \leq x \leq 90$, which of the following expression is NOT equal to $\sin x^{\circ}$?

A. $-\sin(-x^{\circ})$

B. $\sin(-x^{\circ})$

C. $\cos(90 - x)^\circ$

D. $\cos(x - 90)^\circ$

Answer: B

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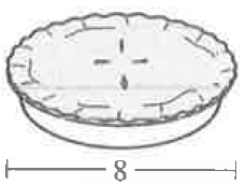
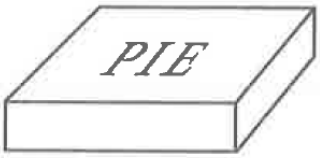
43. A 3-inch-tall rectangular box with a square base is constructed to hold a circular pie that has a diameter of 8 inches. Both are shown below. What is the volume, in cubic inches, of

the smallest such box that can hold this pie?





A. 24

B. 64

C. 72

D. 192

Answer: D

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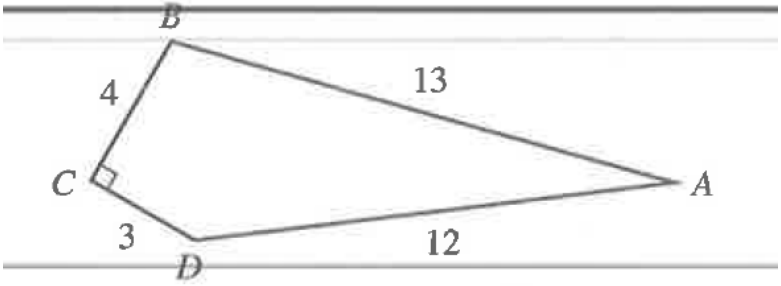
44. Quadrilateral ABCD is shown in the figure below with the lengths of the 4 sides given in meters. The measure of $\angle C$ is 90°. What is tan A?



A. $\frac{4}{12}$

B. $\frac{5}{12}$

C. $\frac{4}{13}$

D. $\frac{5}{13}$

Answer: B

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45. Given today is Tuesday, what day of the week was it 200 days ago?

A. Monday

B. Tuesday

C. Wednesday

D. Friday

Answer: D

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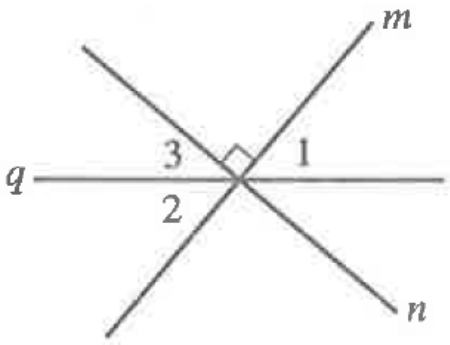
46. In the figure below, line m is perpendicular to line n, and both lines intersect line q at the same point. The measure of $\angle 1$ is $(3x - 10)^\circ$, and the measure of $\angle 2$ is $(2x + 10)^\circ$. What is

the measure of $\angle 3$?



A. 36°

B. 40°

C. 44°

D. 45°

Answer: B

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47. The greatest common factor of 2 whole numbers is 10. The least common multiple of these same 2 numbers is 120. What are the 2 numbers?

A. 6 and 20

B. 10 and 12

C. 10 and 20

D. 30 and 40

Answer: D

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48. The side lengths of a certain triangle are 4, 5, and 7 centrimeters. Which of the following descriptions best classifies this triangle?

A. Scalene acute

B. Scalene right

C. Scalene obtuse

D. Isosceles obtuse

Answer: C

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49. A professional baseball will play 1 game Saturday and 1 game Sunday. A sports write estimate the team has a 60% chance of winning on Saturday but only a 35% chance of winning on Sunday . Using the sportswriter's estimates, what is the probability that the team will lose both games ?

(Note : Neither game can result in a tie.)

A. $14\ \%$

B. $21\ \%$

C. $25\ \%$

D. $26\ \%$

Answer: D

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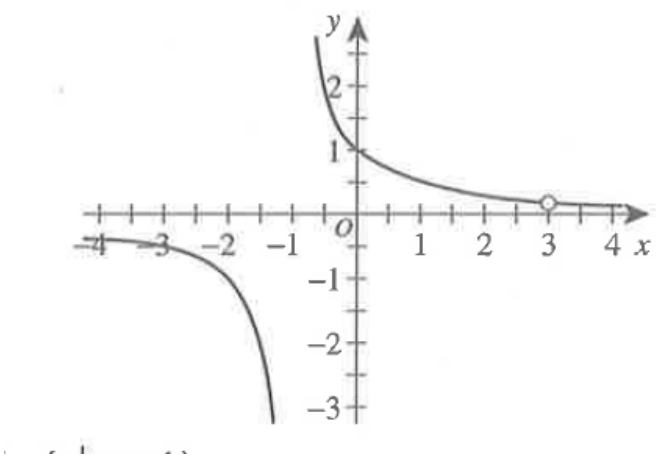
50. The graph of $f(x) = \dfrac{x-3}{x^2-2x-3}$ is shown below. What is the domain of $f(x)$?



A. $\{x \mid x \neq -1\}$

B. $\{x \mid x \neq 2\}$

C. $\{x \mid x \neq 3\}$

D. $\{x \mid x \neq -1 \text{ and } x \neq 3\}$

Answer: D

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51. Get - A - Read Books is adding a new phone line. The phone comany says that the first 3 digits of the phone number must be 555, but the remaining 4 digits, where each digit is a digit from 0 through 9, can be chosen by Get-A-Great-Read Books. How many phone numbers are possible?

A. $5(9^4)$

B. $5^3(9^4)$

C. $5^3(10^4)$

D. 10^4

Answer: D

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52. In the standard (x,y) coordinate plane, the circle centerd at (1,3) that passes through (4,7) is the set of all points that are:

A. 5 coordinate units from (1,3)

B. 5 coordinate units from both (1,3) and (4,7)

C. 5 coordinate units from the line segment with endpoints (1,3) and (4,7)

D. equidistant from (1,3) and (4,7)

Answer: A

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53. Which of the following values is the x-coordinate of the point in the standard (x,y) coordinate plane where the graph of the line y = 7 intersects the graph of the function $y = 1n(x - 2) + 3$?

A. 6

B. $e^4 + 2$

C. $4e + 2$

D. $1n(4) + 2$

Answer: B

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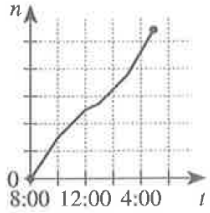
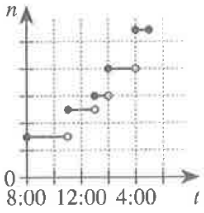
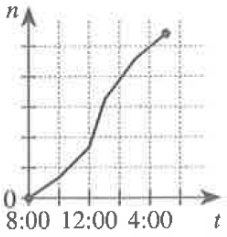
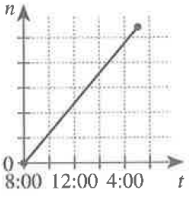
54. Three copy machines- A,B and C- copy at the same rate and will all be used to make copies of a report. At 8:00 a.m., all 3 machines begin copying Machine A breaks down at 10:00 a.m. And is back in service at 1:00 p.m. Machine B breaks down at 12:00 p.m. (noon) and begins copying again at 3:00 p.m. All 3 machines finish copying at 5:00 p.m. when the copying of the report is complete. One of the following graphs showns n, the numbers of copies

made, as a function of t, the time at any given point during the copying. Which graph is it?

A. 

B. 

C. 

D. 

Answer: A

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55. A sporting-goods store sells baseball caps for $22 each. At this price, 40 caps are sold per week. For every $1 decrease in price, the store will sell 4 more caps per week. The store will adjust the price to maximize revenue. What will be the maximum possible revenue for 1 week?

(Note : The revenue equals the number of caps sold times the price per cap.)

A. $880

B. $ 882

C. $924

D. $ 1,024

Answer: D

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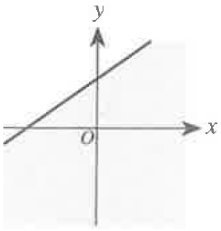
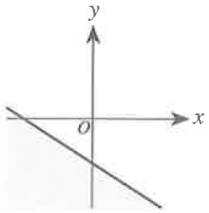
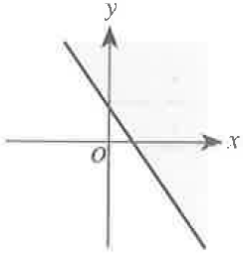
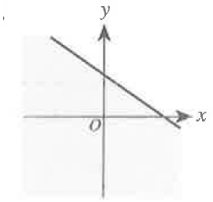
56. Each of the following graphs in the standard (x,y) coordinate plane has the same scale on both axes. One graph is the graph of $ax + by \leq c$, where $0 < a < b < c$. Which one is it?

A. 

B. 

C. 

D. 

Answer: D

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57. The art club designed and made banners of the school colors, blue and white, for their fund-raiser. Each banner required $\frac{1}{4}$ yard of

blue material and $\frac{3}{8}$ yard of white material. The club originally planned to purchase exactly enough material to make 500 banners, but found the material to be cheaper if purchased i full bolts - the blue material in 10 yard bolts and the white material in 12-yard bolts. How many extra banners was the club able to make if they purchased enough full bolts to make at least 500 banners?

A. 12

B. 13

C. 15

D. 16

Answer: A

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58. For all real number x and the imaginary number i, which of the following expressions is equivalent to $(x - 3i)^3$?

A. $x^3 - 9x^2i - 27x + 27i$

B. $x^3 + 9x^2i - 27x - 27i$

C. $x^3 + 3x^2i - 9x - 27i$

D. $x^3 - 3x^2i - 9x + 27i$

Answer: A

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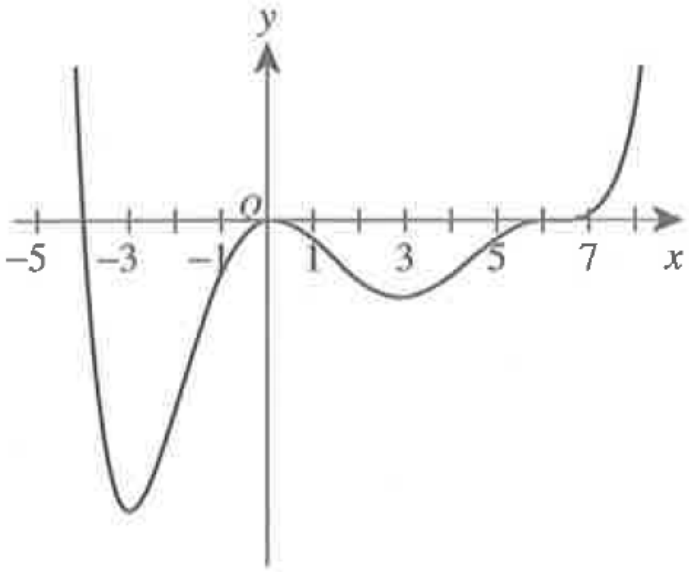
59. The graph in the standard (x,y) coordinate plane below is the graph of one of the

following functions, which one?



A. $g(x) = x(x-6)(x+4)$

B. $h(x) = x^2(x+6)(x-4)$

C. $n(x) = x^2(x+6)^3(x-4)$

D. $p(x) = x^2(x-6)^3(x+4)$

Answer: D

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60. The table below shows the numbers of rows and columns in each of 5 matrices.

Matrix	Number of rows	Number of columns
A	m	n
B	m	m
C	k	n
D	m	k
E	n	m

For distinct values of k, m, and n, which of the following matrix products is NOT possible?

A. ED

B. DC

C. CE

D. AC

Answer: D

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