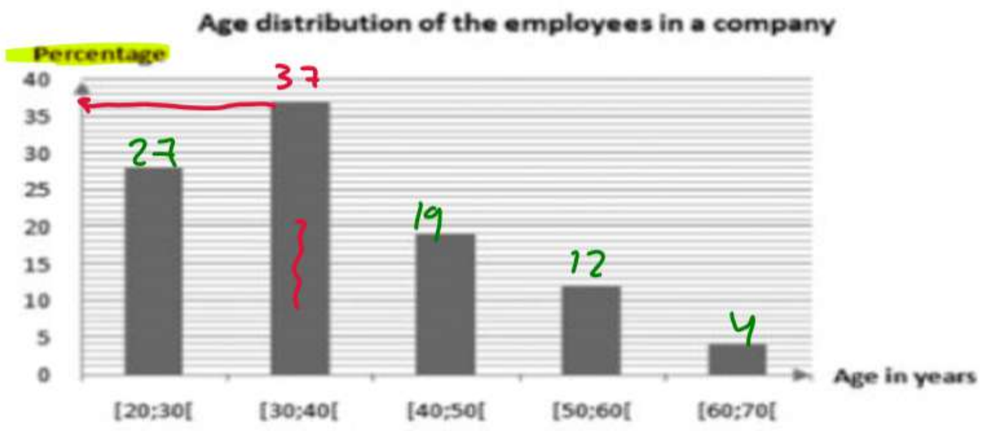
1

The bar graph below shows the age distribution of the employees in a multi-branched bank.



If 481 employees are aged between 30 and 40, what is the total number of employees in this company?

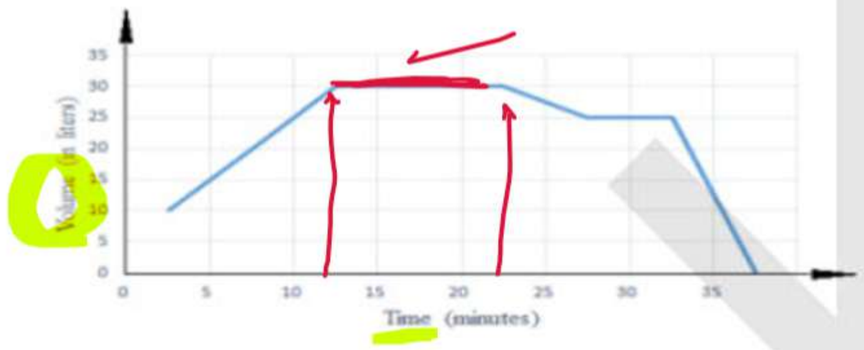
37 % → 481

100 % → ??

$\frac{100 \times 481}{37} = 1300$

A. 1150
B. 1200
C. 1550
D. 1300

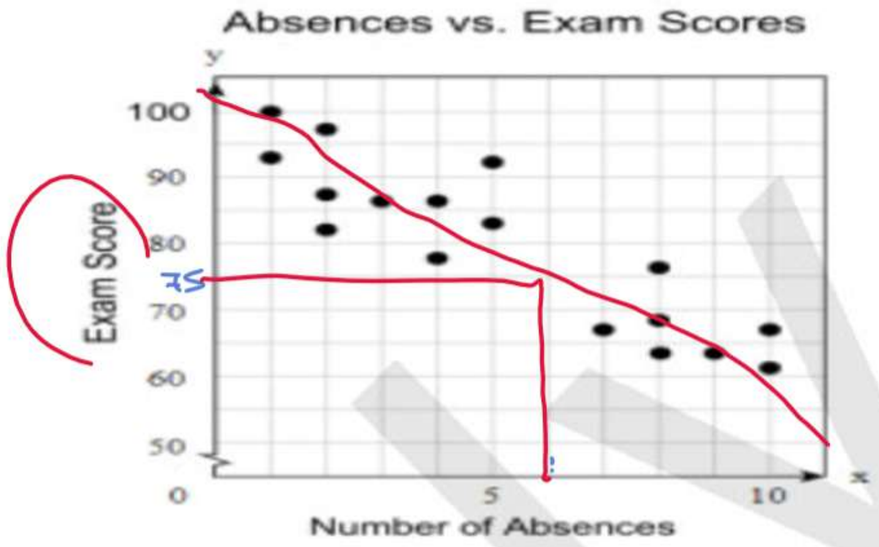
2



The graph above represents the volume of oil in a certain container over the course of about 37.5 minutes. The container has a small hole through which oil leaks occasionally, and so a certain amount is occasionally added by the owner. Which of the following statements about the situation can be true?

A. Oil is not leaking from the container after 30minutes.
B. Oil is being added to the container at the same rate at which it is leaking between 12.5 and 22.5 minutes.
C. Oil is leaking from the container without any amount being added between 27.5 and 32.5 minutes
D. The rate at which oil is added is the same at which oil is leaking between 2.5 and 12.5 minutes.

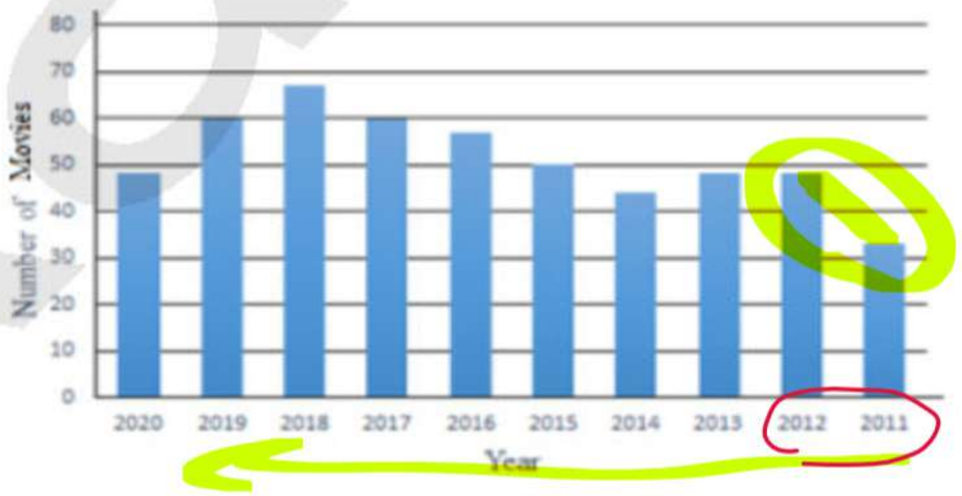
3



Mrs. Mary made the scatterplot above to show the relationship between the number of absences and a student's final exam score without drawing the line of best fit. Which of the following scores could a student approximately get on the final exam with 6 absences?

A. 70
B. 65
C. 87
D. 76

4



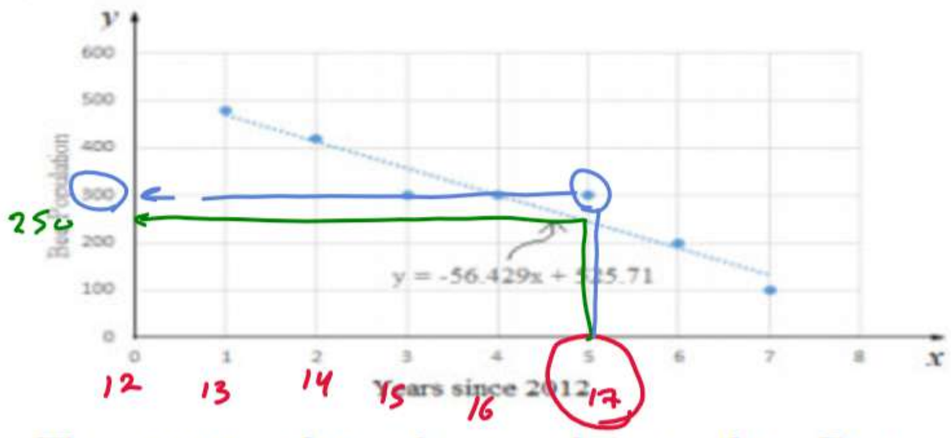
The graph above shows the number of action movies made each year from 2011 to 2020. The greatest increase in the number of action movies took place between which two of the following years?

A. 2011 and 2012
B. 2012 and 2013
C. 2017 and 2018
D. 2019 and 2020

Actual.

Prediction.

5



250

12 13 14 15 16 17

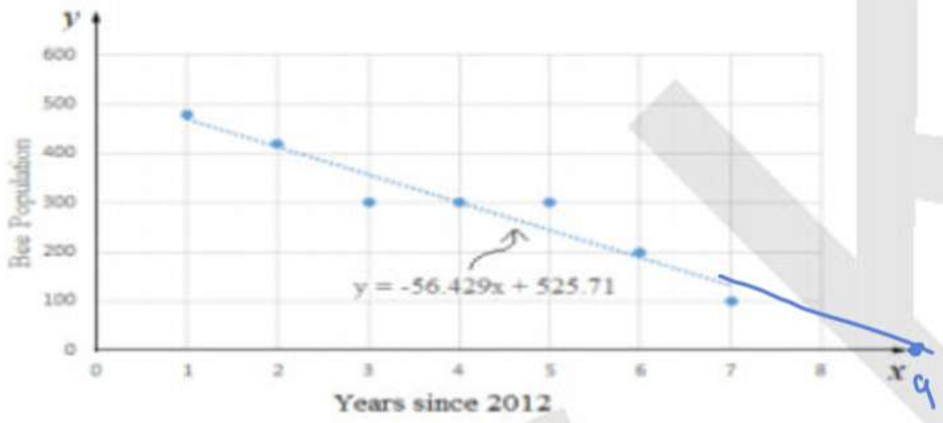
The scatterplot above shows the Bee population in a certain farm for every year since 2012. A line of best fit and its equation are also shown.

Which of the following is closest to the difference in the actual population number of bees and the number predicted by the line of best fit in 2017?

300 − 250 = 50

A. 13
B. 56
C. 100
D. 525

6



9

The scatterplot above shows the Bee population in a certain farm for every year since 2012. A line of best fit and its equation are also shown.

According to the line of best fit, in which year is the population of bees most likely predicted to drop to zero?

2012 + 9 = 2021

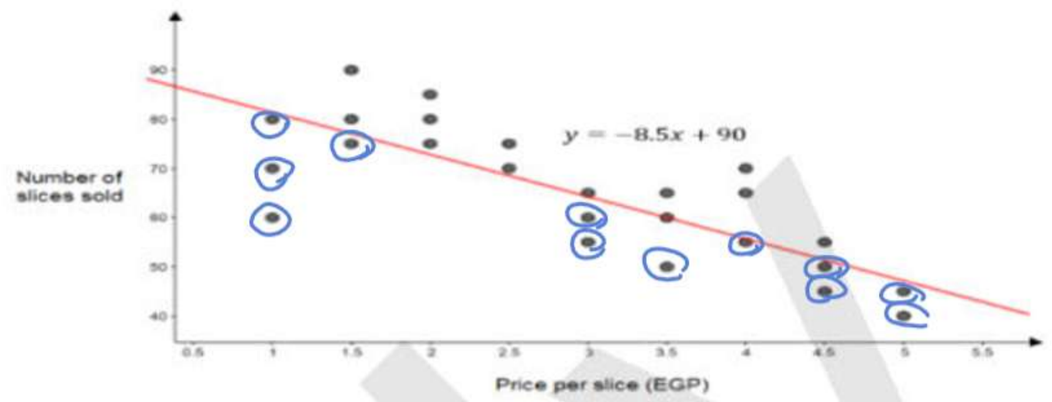
A. 2013
B. 2019
C. 2021
D. 2023

y = mx + b

slope: Average rate; Y for x

y-int: initial starting at x=0.

7



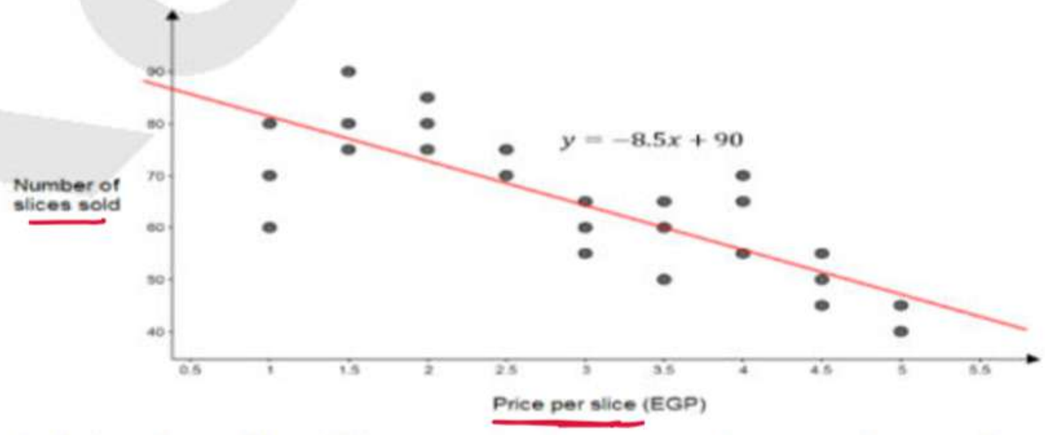
A kiosk sells slices of pizza and sets the price per slice each week. The scatterplot above shows the price and the number of slices sold over 25 weeks, along with the line of best fit and its equation.

For how many weeks was the number of slices sold smaller than the amount predicted by the line of best fit?

Actual < Prod.

A. 12
B. 9
C. 15
D. 16

8



A kiosk sells slices of pizza and sets the price per slice each week. The scatterplot above shows the price and the number of slices sold over 25 weeks, along with the line of best fit and its equation.

What is the best interpretation of the meaning of the slope of the line of best fit?

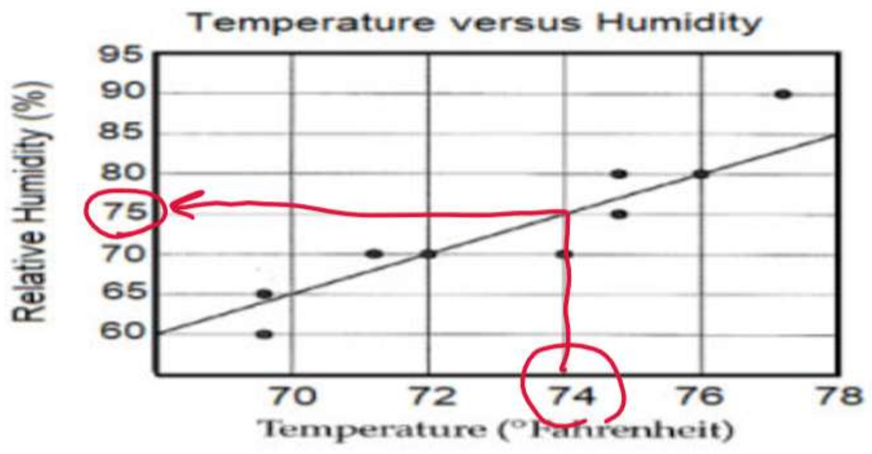
A. If the price of the slice increases by one EGP, the kiosk expects to sell 8.5 more slices of pizza.
B. If the price of the slice decreases by one EGP, the kiosk expects to sell 8.5 fewer slices of pizza.
C. If the price of the slice increases by one EGP, the kiosk expects to sell 8.5 fewer slices of pizza.
D. If the store sells slices for 0 EGP, 90 people would be expected to accept the free slices of pizza.

Actual

Prediction

9

Humidity percentage vary according to the temperature. The scatterplot below compares the temperature, in degree Fahrenheit and relative humidity on a certain day, every hour from 12:00 P.M. to 8:00 P.M. The line of best fit is also shown.

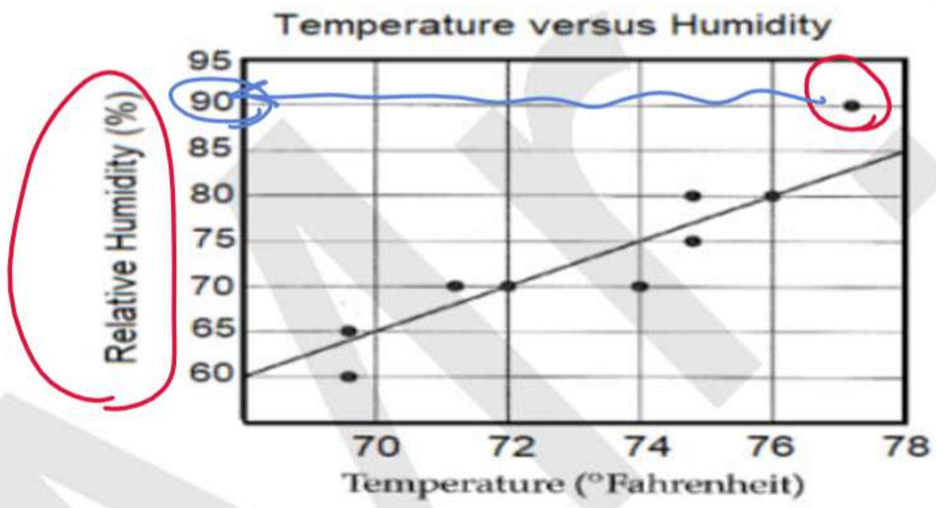


Based on the line of best fit, what is the predicted humidity percentage at a temperature of 74° Fahrenheit?

75

10

Humidity percentage vary according to the temperature. The scatterplot below compares the temperature, in degree Fahrenheit and relative humidity on a certain day, every hour from 12:00 P.M. to 8:00 P.M. The line of best fit is also shown.



What is the humidity percentage represented by the data point that is farthest from the line of best fit?

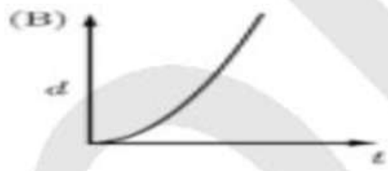
90

11

An athlete runs every morning for 2 hours straight. On each day, as he progresses, he gets tired and starts slowing down little by little. Which of the following graphs best depicts the distance d covered by the athlete starting from home during the 2 hours he runs every morning as a function of time t?

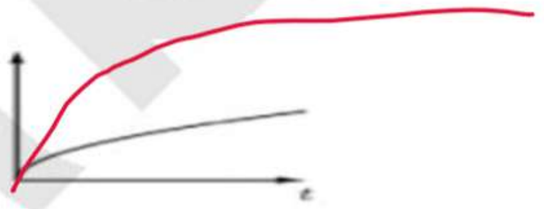
A.

B.

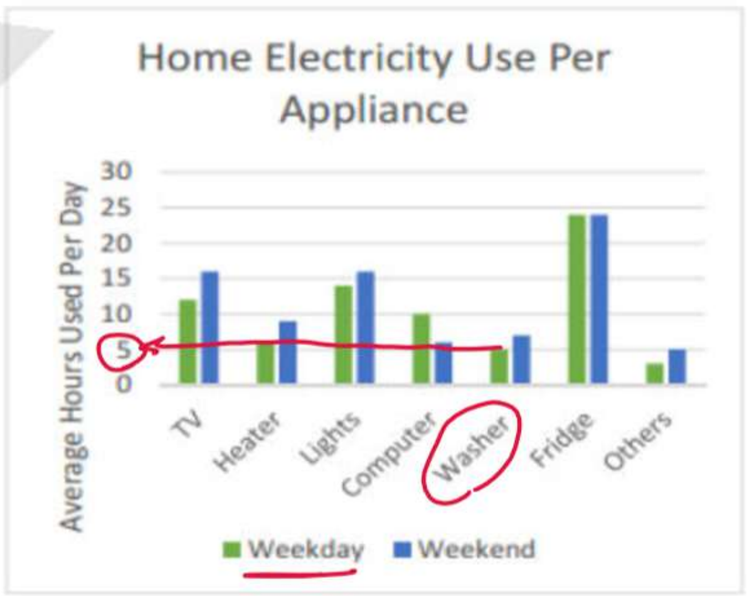


C.

D.

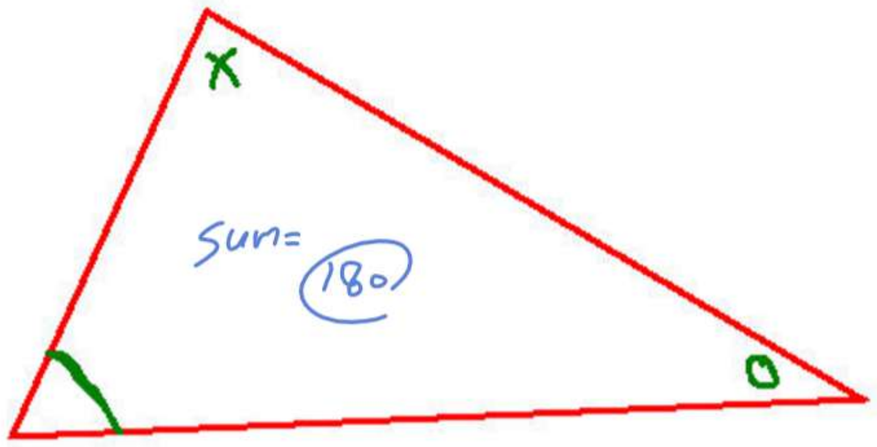


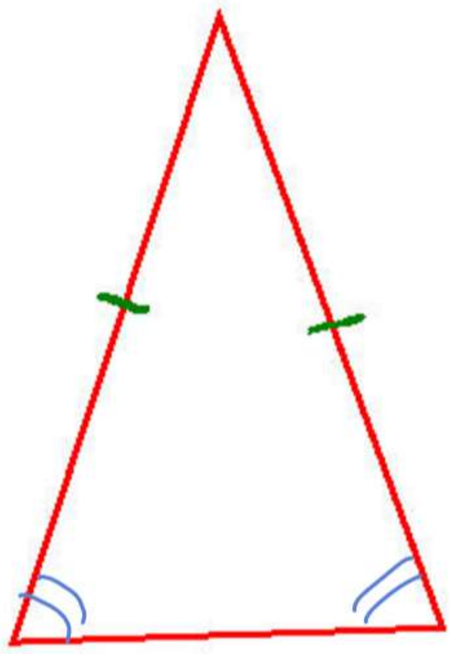
12

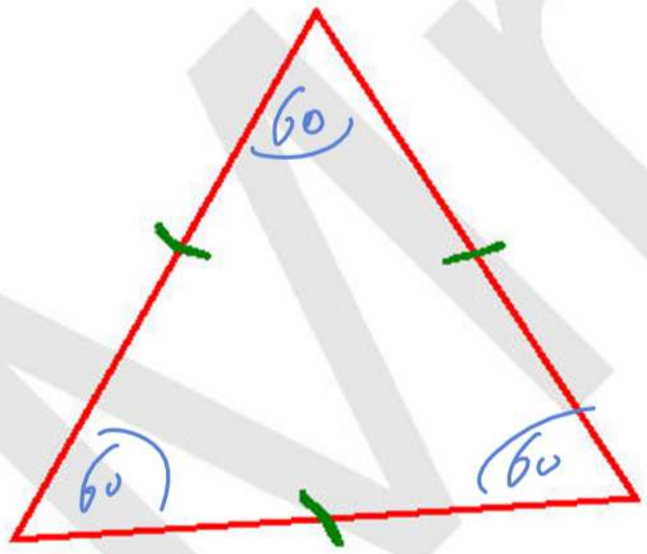


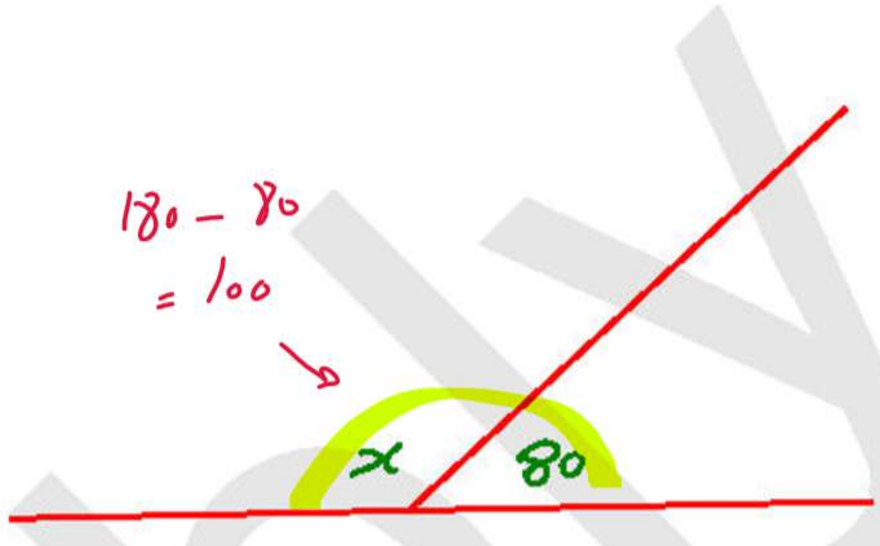
How many hours a day, on average, is the washer used on weekdays?

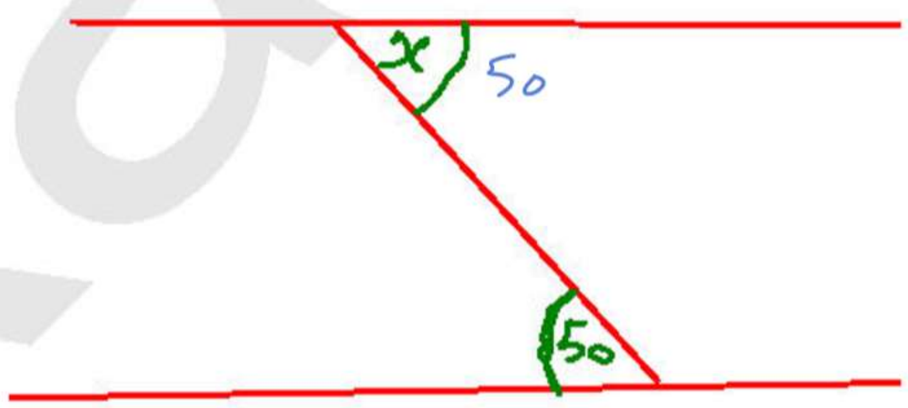
A. 5
B. 6
C. 7
D. 12

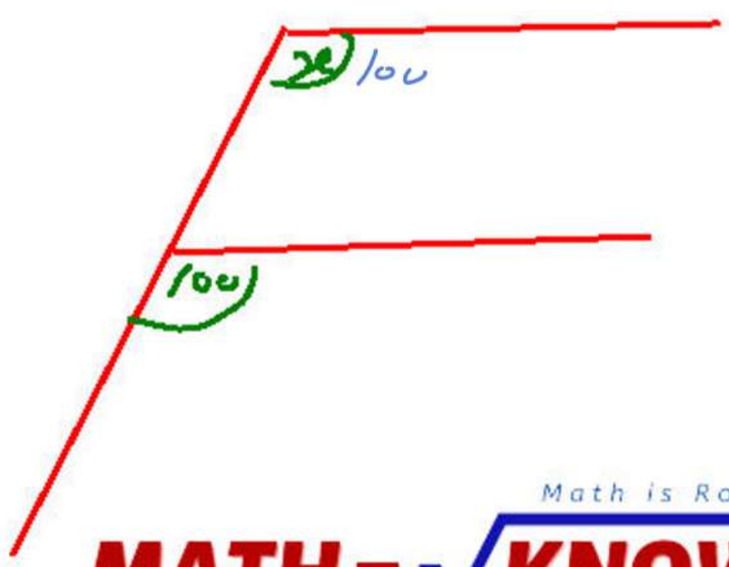




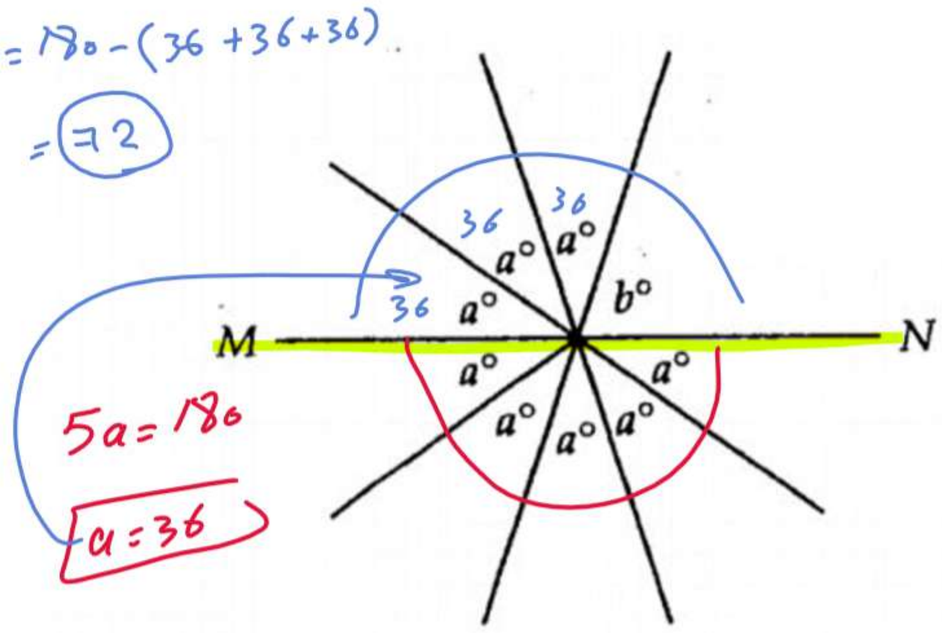






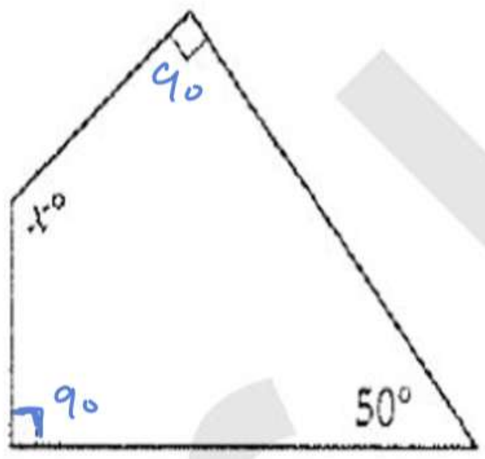


1



In the figure above, MN is a line. What is the value of b?

2



What is the value of x in the quadrilateral above?

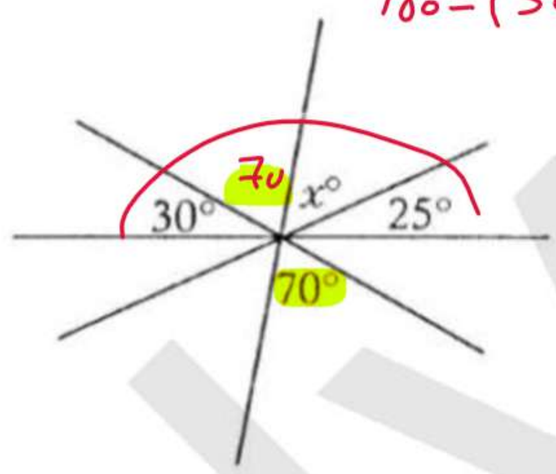
A) 125

B) 130

C) 135

D) 140

3



In the figure above, four lines intersect at a point. What is the value of x?

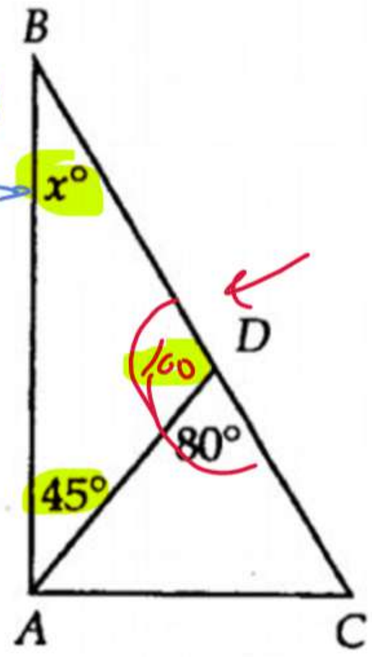
A) 30

B) 45

C) 55

D) 65

4



Note: Figure not drawn to scale.

In the figure above, what is the value of x?

$x^a \cdot x^b = x^{a+b}$

$\frac{x^a}{x^b} = x^{a-b}$

$(x^a)^b = x^{ab}$

$(x^a y)^b = x^{ab} y^b$

$2 \cdot 2 = 4 = 2^2$

ex: $2^5 \cdot 4^3 = 2^x$

$2^5 \cdot 2^{2\times3} = 2^x$

$2^5 \cdot 2^6 = 2^x$

$2^{11} = 2^x$

$x = 11$

ex: $4^x \cdot 8 = 16$

$2^{2x} \cdot 2^3 = 2^4$

$2x+3 = 4$

$2 \cdot 2 = 4 = 2^2$

$2 \cdot 2 \cdot 2 = 8 = 2^3$

$2 \cdot 2 \cdot 2 \cdot 2 = 16 = 2^4$

$x = \frac{1}{2}$

ex: $5^x = 125$

$5 \cdot 5 \times 5 = 125 = 5^3$

$5^x = 5^3$

$x = 3$

1

What is the value of $\frac{2^5 \times 16^4}{64^3}$?

Calc.

8

2

What is the value of $m + \frac{3}{4}$ if $4^{2m+1} = 32^3$? (Grid-in)

shift solve

m=3.25

3.25 + 3/4

= 4

3

If $4^{2n+3} = 8^{n+5}$, what is the value of n?

shift solve

T&E

$4^{2(6)+3} = 8^{6+5}$

$2^{2(2n+3)} = 2^{3(n+5)}$

$2(2n+3) = 3(n+5)$

shift Solve

A) 6

B) 7

C) 8

D) 9

4

If $9^{2x-1} = 3^8$, what is the value of $2x - 5$?

shift Solve

$3^{2(2x-1)} = 3^8$

$2(2x-1) = 8$

$4x - 2 = 8$

$4x = 10$

$x = 2.5$

$2(2.5) - 5$

$= 0$

A. −5

B. 0

C. 5

D. 10

5

If $(3^9)^{3^{12}} = 3^{3^x}$, what is the value of x?

$(3^{3^2})^{3^{12}} = 3^{3^x}$

$3^{2} \cdot 3^{12} = 3^{3^x}$

$3^{14} = 3^{3^x}$

$x = 14$

6

If $x^2y^3 = 10$ and $x^3y^2 = 8$, what is the value of x^5y^5?

$(x^2y^3)(x^3y^2) = x^5y^5$

$10 \times 8 = 80$

A) 18

B) 20

C) 40

D) 80

inside

out

coloringpagesonly.com

$\frac{in}{out}$

out $\sqrt[3]{x^{12}}$ in $= x^{\frac{12}{3}}$

$\sqrt{K^8} = K^{\frac{8}{2}}$

$\sqrt{x} = x^{\frac{1}{2}}$

$\sqrt[a]{x^b} = x^{\frac{b}{a}}$

$\sqrt{4} = 2$

$\sqrt{9} = 3$

$\sqrt{16} = 4$

$\sqrt{25} = 5$

$\sqrt{36} = 6$

$\sqrt{49} = 7$

$\sqrt{64} = 8$

$\sqrt{81} = 9$

$\sqrt{100} = 10$

$\sqrt[3]{8} = 2$ $\quad 2 \cdot 2 \cdot 2 = 8$

$\sqrt[3]{27} = 3$

$\sqrt[3]{64} = 4$

$\sqrt[3]{125} = 5$

1

Which of the following is an equivalent form of $\sqrt[3]{f^{6a}k^2}$, where $f > 0$ and $k > 0$?

A) $f^{\frac{1}{3a}}k^{-1}$

B) $f^{\frac{1}{2a}}k^{\frac{3}{2}}$

C) $f^{3a}k^{-1}$

D) $f^{2a}k^{\frac{2}{3}}$

2

Which of the following is equivalent to $(x^2-4)^{\frac{3}{2}}$?

A) x^3-8

B) $(x-2)^3$

C) $\sqrt{(x^2-4)^3}$

D) $(\sqrt[3]{x^2-4})^2$

3

Which of the following is an equivalent form of $\sqrt[3]{54x^5y^{12}}$?

A) $3xy^4\sqrt[3]{2x^2}$

B) $3x^3y^{12}\sqrt[3]{2x^2y}$

C) $18xy^4\sqrt[3]{x^2}$

D) $18x^3y^{12}\sqrt[3]{x^2y}$

4

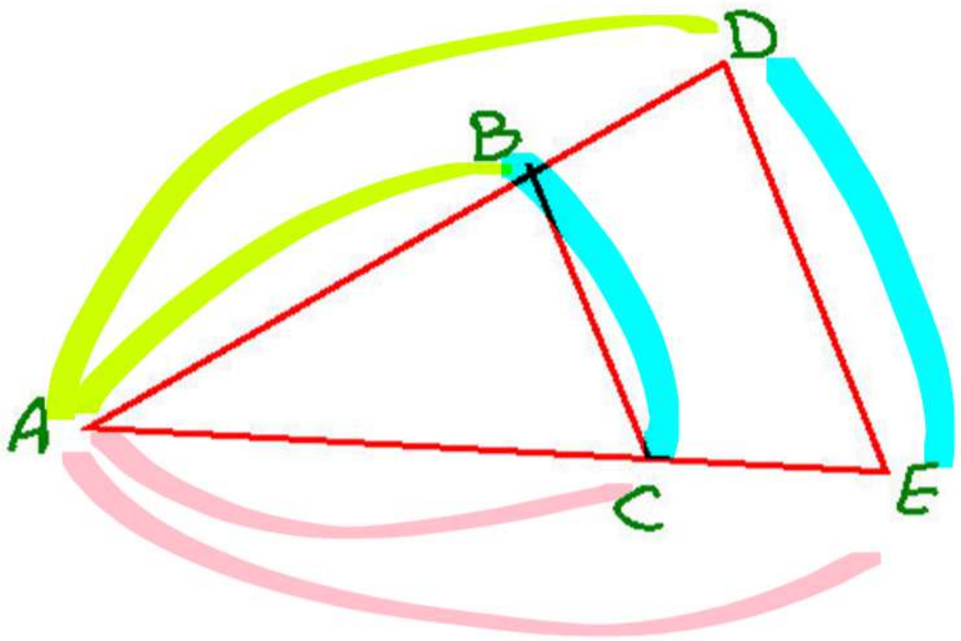
The expression $\sqrt[4]{x^2y^4}$, where $x > 0$ and $y > 0$, is equivalent to which of the following?

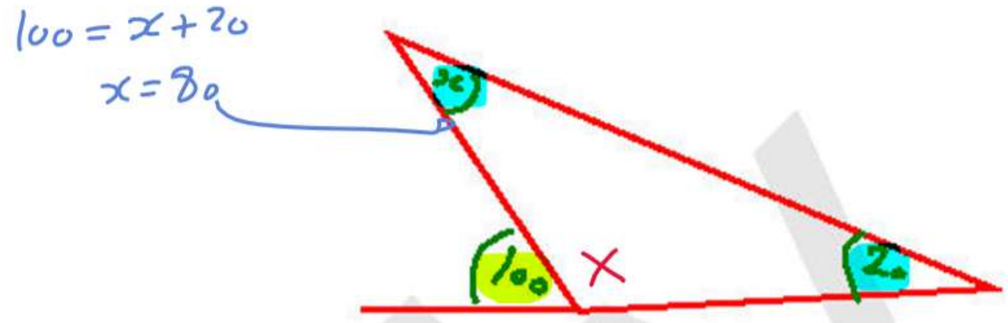
A) $\sqrt{xy}$

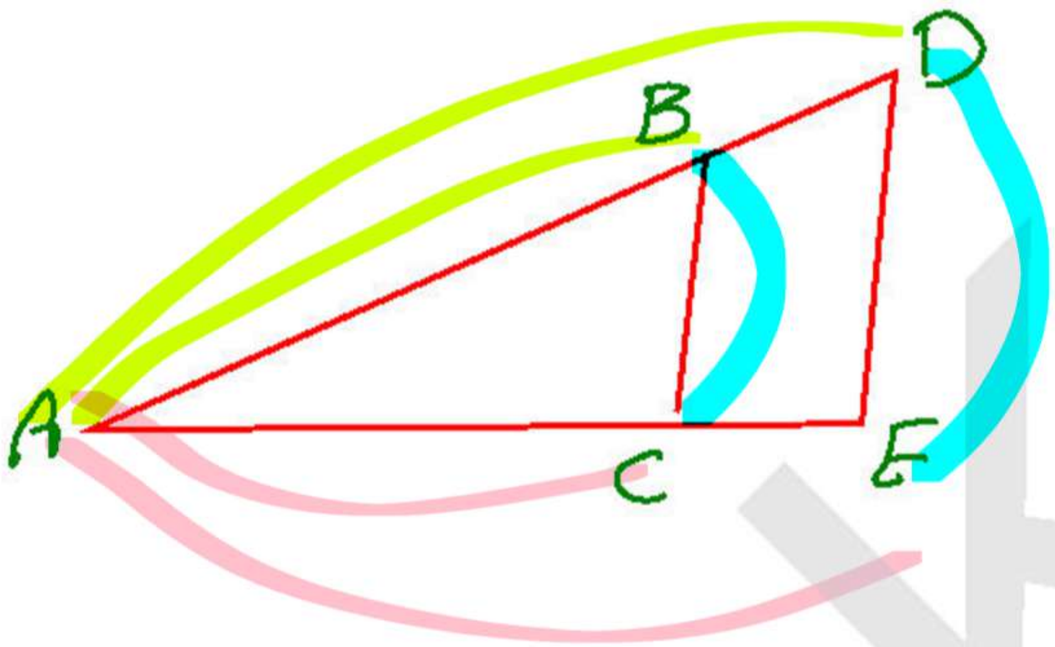
B) $y\sqrt{x}$

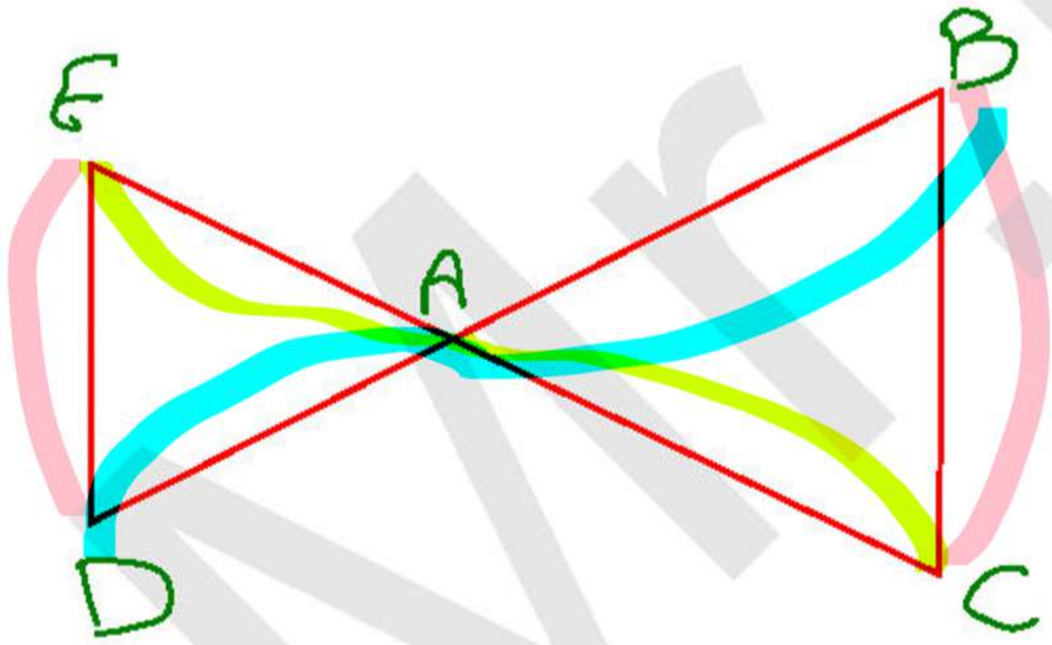
C) $\frac{1}{x^2}$

D) x^2y

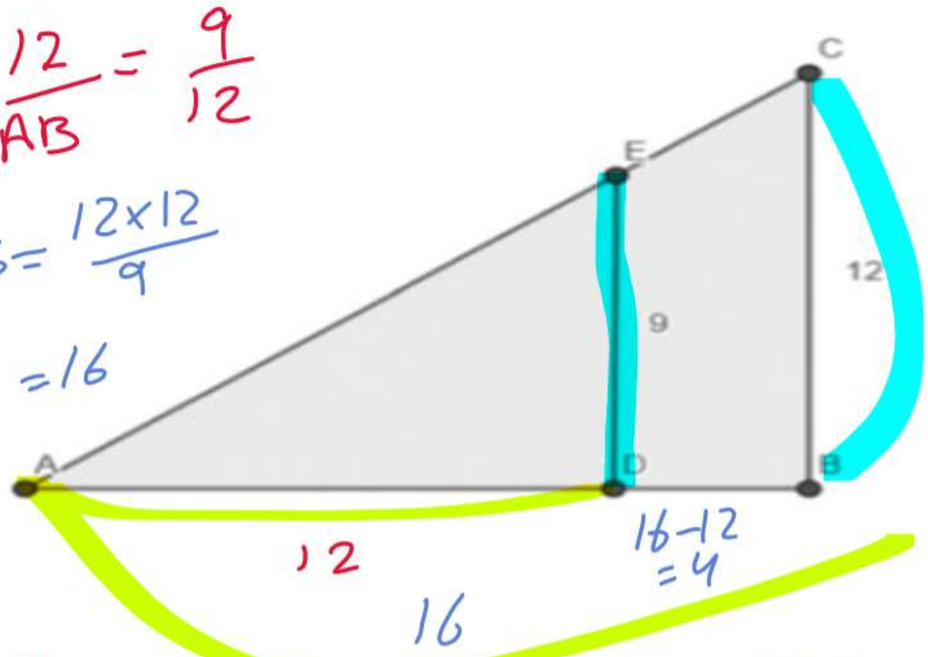








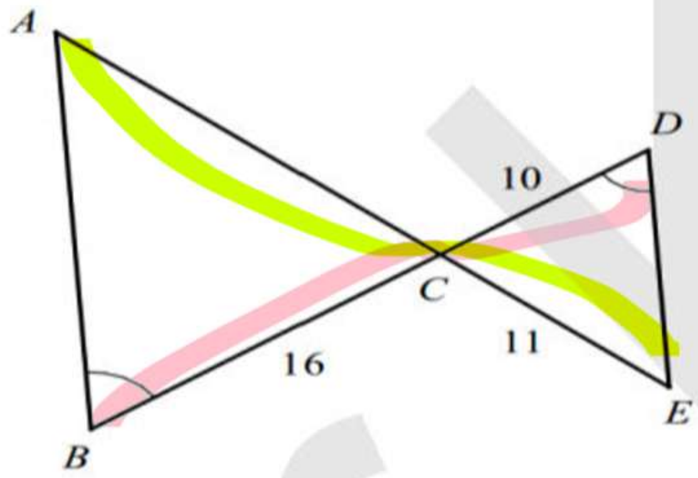
1



. The right triangles ADE and ABC are similar. If $AD = \frac{4}{3}ED$, how long is DB?

A. 3
B. 4
C. 5
D. 6

2

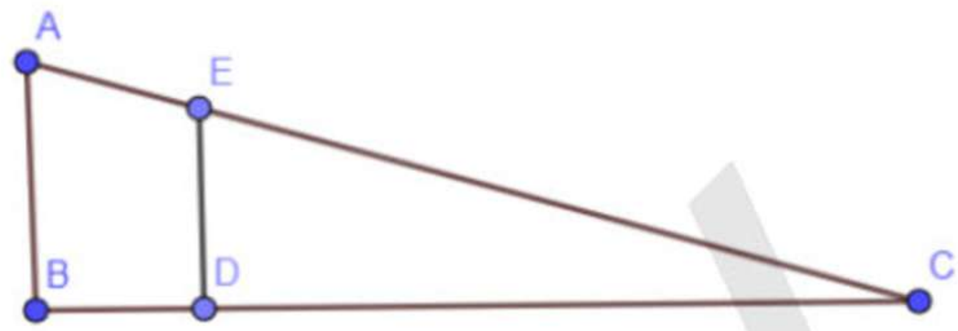


Note: Figure not drawn to scale.

In the figure above, $\angle B \cong \angle D$. If $BC = 16$, $CD = 10$, and $CE = 11$, what is the length of AE?

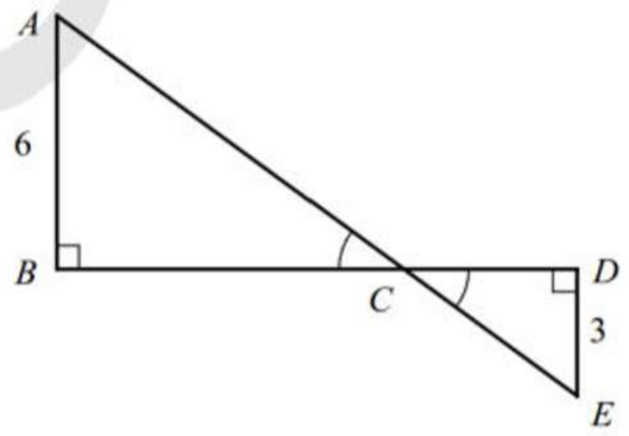
A) 16.8
B) 17.2
C) 17.6
D) 18.4

3



In the given figure, ABC is a triangle right at B, segment ED is parallel to AB, BC = 24, and AC = 26. If ED = 8, what is the length of $\overline{EC}$?

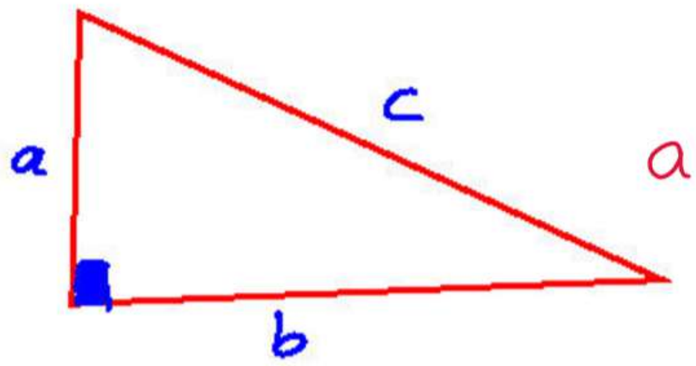
4



In the figure above, if $AB = 6$, $DE = 3$, and $BD = 12$, what is the length of AE?

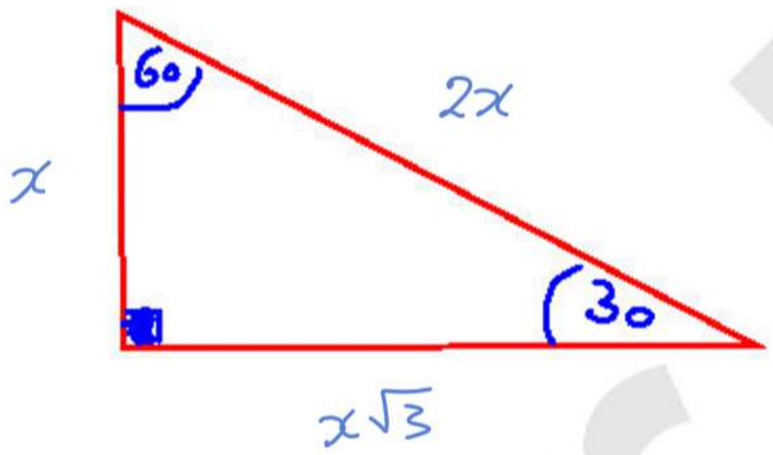
A) 12
B) $9\sqrt{2}$
C) $8\sqrt{3}$
D) 15

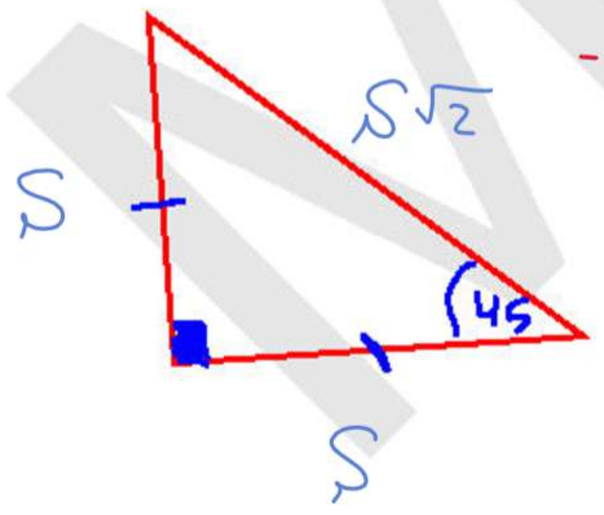
Special



$$c = \sqrt{a^2 + b^2}$$

$$a = \sqrt{c^2 - b^2}$$



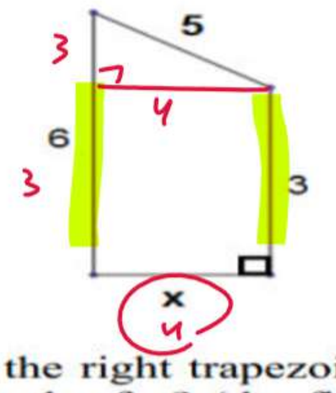


Common Δs

3, 4, 5

5, 12, 13

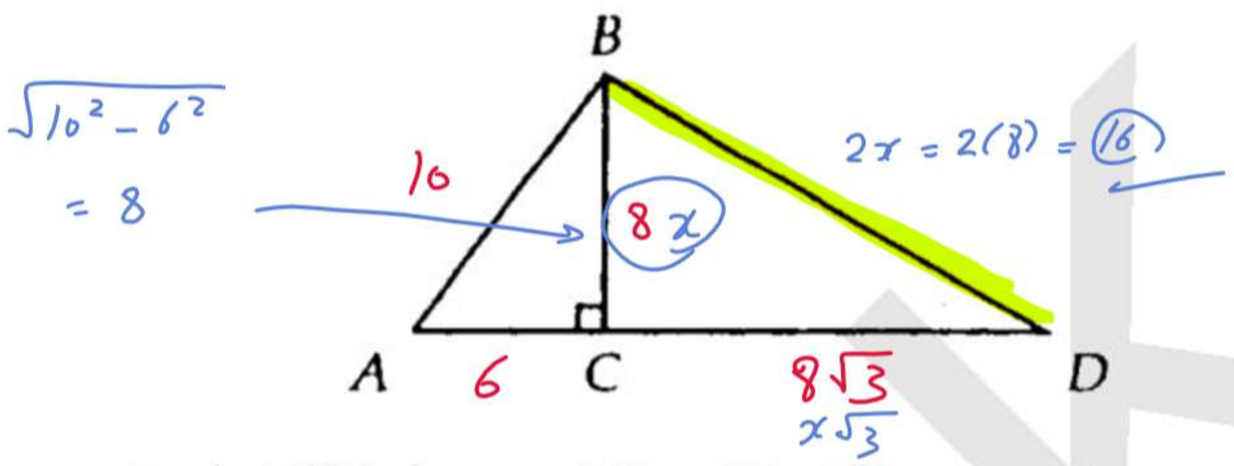
1



In the right trapezoid above, what is the length of x? (the figure is not drawn to scale)

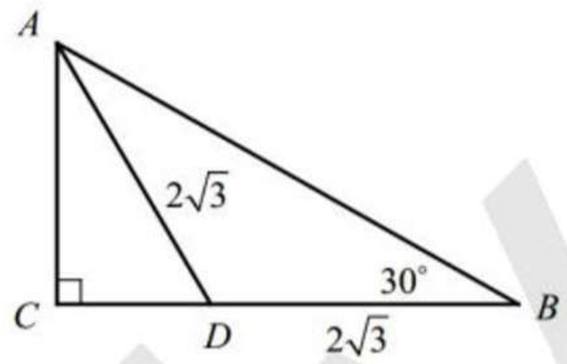
(Grid in)

2



In $\triangle ABD$ above, $AB = 10$, $AC = 6$, and $CD = 8\sqrt{3}$. What is the length of $\overline{BD}$?

3



In the figure above, if $AD = BD = 2\sqrt{3}$, what is the length of AB?

A) $4\sqrt{3}$

B) $3\sqrt{6}$

C) 6

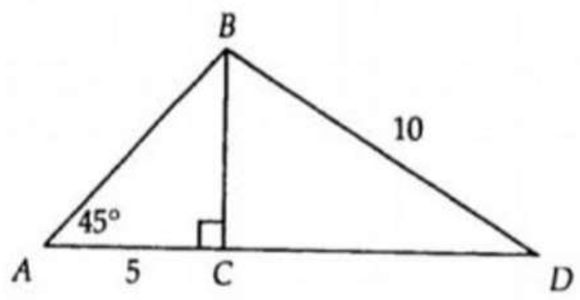
D) $6\sqrt{2}$

4

Car A and car B both leave from the same location at the same time. Car A travels due east at a constant rate of 50 kilometers per hour, while car B travels due south at a constant rate of 120 kilometers per hour.

What is the distance in kilometers, between the two cars after one hour?

5



In $\triangle ABD$ above, $AC = 5$ and $BD = 10$. What is the length of $\overline{CD}$?

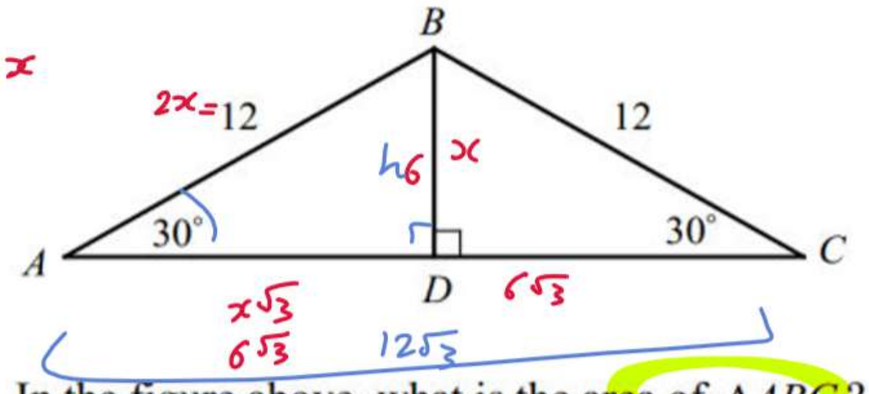
A) $5\sqrt{2}$

B) $5\sqrt{3}$

C) 6

D) $6\sqrt{2}$

1



In the figure above, what is the area of ΔABC?

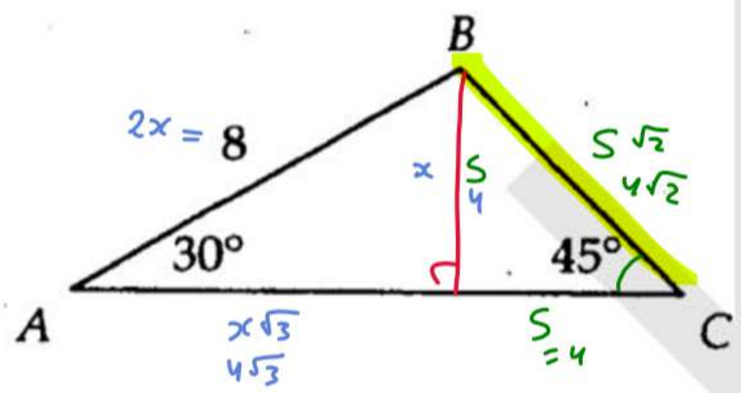
A) $24\sqrt{3}$

B) $30\sqrt{3}$

C) $36\sqrt{3}$

D) $48\sqrt{3}$

2



In the figure above, $\angle BAC = 30°$, $\angle BCA = 45°$, and $AB = 8$. What is the length of $\overline{BC}$?

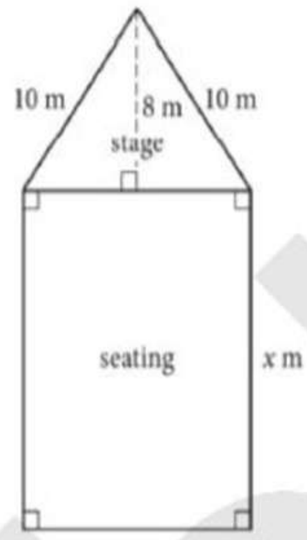
A) 4

B) $4\sqrt{2}$

C) $4\sqrt{3}$

D) $8\sqrt{2}$

3



The figure above is the floor plan drawn by an architect for a small concert hall. The stage has depth 8 meters (m) and two walls each of length 10 m. If the seating portion of the hall has an area of 180 square meters, what is the value of x?