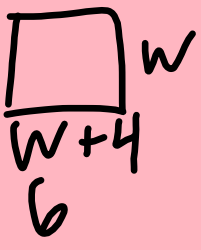
The length of a rectangular garden is 4 meters more than its width. The area of the rectangle is 60 meters. Find the dimensions of the rectangle.



$w(w+4)=60$

$w^2+4w-60=0$

$(w+10)(w-6)=0$

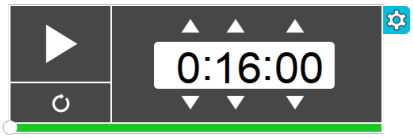
$w=-10$ $w=6m$

$l=10m$

1	60
2	30
3	20
4	15
5	12
6	10

Collect HW

Complete 5 questions of calculator active EOC prep on Canvas



31 The table below shows the U.S. average life expectancy at birth, in years, in various decades.

Years since 1930	Life Expectancy at Birth
10	62.9
20	68.2
30	69.7
40	70.8
50	73.7
60	75.4
70	77.0
80	78.7

What is the meaning of the slope of the linear best-fit equation for the data?

A The predicted average life expectancy at birth in 1930 was about 62.7 years.

B The predicted average life expectancy at birth in 1930 was about 57.6 years.

C The average life expectancy at birth increases by about 6.7 each year.

D The average life expectancy at birth increases by about 0.2 each year.

32 The choices below are data sets. In the choices, w is a constant. Each choice has the same mean. Which choice has the greatest standard deviation?

A w − 2, w − 1, w, w + 1, w + 2

B w − 2, w − 2, w, w + 2, w + 2

C w − 3, w − 1, w, w + 1, w + 3

D w − 3, w, w, w, w + 3

33 Abby scored 87, 93, 96, and 89 on her first four history quizzes. What score does Abby need to get on her fifth quiz to have an average of exactly 91 on her history quizzes?

A 90

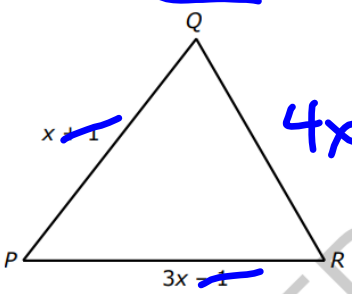
B 94

C 98

D 100

$$\frac{87+93+96+89+X}{5}=91$$

34 The perimeter of the triangle below is $8x - 6$.



Which expression represents the length of $\overline{QR}$?

A $4x - 4$

B $4x - 6$

C $6x - 4$

D $6x - 8$

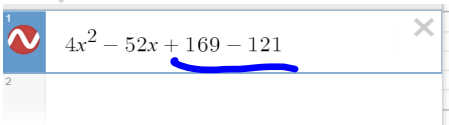
35 What are the solutions to the equation $4x^2 - 52x + 169 = 121$?

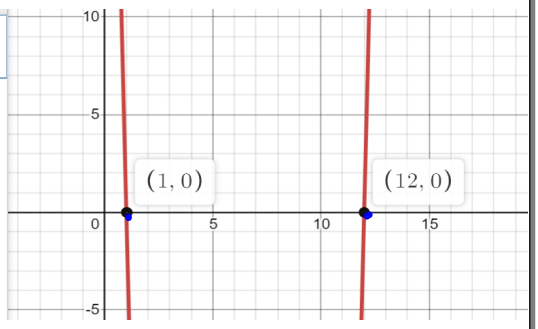
A {1, 12}

B {1, 12}

C {1, 12}

D {1, 12}



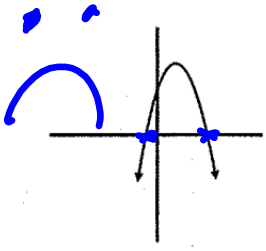


15. If the zeros of a function are $x = 2$ and $x = 7$, what was the function?

$f(x) = (x-2)(x-7)$

$f(x) = x^2 - 9x + 14$

16. Based on the graph below, which of the following functions could have produced the graph?



A) $f(x) = (x+2)(x+6)$ $x=-2$ $x=-6$

B) $f(x) = (x-2)(x+6)$ $x=2$ $x=-6$

C) $f(x) = (2-x)(6-x)$ [redacted] $x=2$ $x=6$

D) $f(x) = (2+x)(6-x)$ [redacted] $x=-2$ $x=6$

17. A government buys x fighter planes at z dollars each, and y tons of wheat at w dollars each. It spends a total of B dollars, where $B = xz + yw$. In (a)–(c), write an equation whose solution is the given quantity.

a) The number of tons of wheat the government can afford to buy if it spends a total of \$100 million, wheat costs \$300 per ton, and it must buy 5 fighter planes at \$15 million each.

$100{,}000{,}000 = 5(15{,}000{,}000) + 300y$

$100{,}000{,}000 = 75{,}000{,}000 + 300y$

b) The price of fighter planes if the government bought 3 of them, in addition to 10,000 tons of wheat at \$500 a ton, for a total of \$50 million.

$50{,}000{,}000 = 3z + 10{,}000(500)$

$50{,}000{,}000 = 3z + 5{,}000{,}000$

c) The price of a ton of wheat, given that a fighter plane costs 100,000times as much as a ton of wheat, and that the government bought 20 fighter planes and 15,000 tons of wheat for a total cost of \$90 million.

(https://www.illustrativemathematics.org/content-standards/HSA/CED/A/1/tasks/580)

$90{,}000{,}000 = 20(100{,}000w) + 15{,}000w$

$90{,}000{,}000 = 2{,}000{,}000w + 15{,}000w$

$90{,}000{,}000 = 2{,}015{,}000w$

18. A ball thrown vertically upward at an initial velocity of v_0 ft/sec rises a distance d feet in t seconds, given by $d = 6 + v_0 t - 16t^2$. Write an equation whose solution is:

a) The time it takes a ball thrown at a speed of 88 ft/sec to rise 20 feet.

$20 = 6 + 88t - 16t^2$

b) The speed with which the ball must be thrown to rise 20 feet in 2 seconds.

$20 = 6 + 2v - 64$

$20 = 2v - 58$

(https://www.illustrativemathematics.org/content-standards/HSA/CED/A/2/tasks/437)

19. Mary and Jeff both have jobs at a baseball park selling bags of peanuts. They get paid \$12 per game and \$1.75 for each bag of peanuts they sell. Create equations, that when solved, would answer the following questions:

a) How many bags of peanuts does Jeff need to sell to earn \$54?

$54 = 12 + 1.75b$

b) How much will Mary earn if she sells 70 bags of peanuts at a game?

$E = 12 + 1.75(70)$

c) How many bags of peanuts does Jeff need to sell to earn at least \$68?

$12 + 1.75b \geq 68$

20. Phil purchases a used truck for \$11,500. The value of the truck is expected to decrease by 20% each year. When will the truck first be worth less than \$1,000?

$11{,}500(.80)^x = y$ y-\$ worth, x-time in yrs

Use TABLE

11 years

Homework: Complete pg.4

21. Suppose a friend tells you she paid a total of $16,368 for a car, and you'd like to know the car's list price (the price before taxes) so that you can compare prices at various dealers. Find the list price of the car if your friend bought the car in:

a) Arizona, where the sales tax is 6.6%. $16368 = 1.066x$, $\$15,355 = x$

b) New York, where the sales tax is 8.25%. $16368 = 1.0825x$, $\$15,121 = x$

c) A state where the sales tax is r. $\frac{16368}{1+r} = P$ $16368 = P(1+r)$

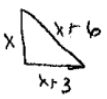
(https://www.illustrativemathematics.org/content-standards/HSA/CED/A/1/tasks/582)

22. Stephen wants to create a landscaping feature in the shape of a parallelogram in his yard. Stephen has 200 square feet of mulch available for the project. To be most pleasing to the eye, he decides that he wants the length of the parallelogram to be 3 more than twice the width, measured in feet. If Stephen intends to cover the entire landscape feature in mulch, ~~what can the width of the parallelogram be?~~ write an equation to show the scenario

$w(2w+3) = 200$

$2w^2 + 3w - 200 = 0$

23. The larger leg of a right triangle is 3 cm longer than its smaller leg. The hypotenuse is 6 cm longer than the smaller leg. How many centimeters long is the smaller leg?



$x^2 + (x+3)^2 = (x+6)^2$

$x^2 + x^2 + 6x + 9 = x^2 + 12x + 36$

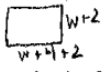
$-x^2 - 12x - 36$

$x^2 - 6x - 27 = 0$

$(x-9)(x+3)$

9 cm

24. The floor of a rectangular cage has a length 4 feet greater than its width, w. James will increase both dimensions of the floor by 2 feet. Which equation represents the new area, N, of the floor of the cage?



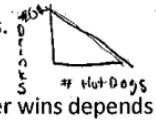
$(w+2)(w+6)$

$w^2 + 8w + 12$

25. The FFA had a fundraiser by selling hot dogs for $1.50 and drinks for $2.00. Their total sales were $400.

a) Write an equation to calculate the total of $400 based on the hot dog and drink sales.
$1.50x + 2y = 400$ x: hot dog y: drinks

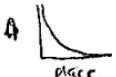
b) Graph the relationship between hot dog sales and drink sales. $y = -\frac{3}{4}x + 200$



26. In a woman's professional tennis tournament, the money a player wins depends on her finishing place in the standings. The first-place finisher wins half of $1,500,000 in total prize money. The second-place finisher wins half of what is left; then the third-place finisher wins half of that, and so on.

a) Write a rule to calculate the actual prize money in dollars won by the player finishing in nth place, for any positive integer n. $1{,}500{,}000(.5)^n = P(n)$

b) Graph the relationship between the first 10 finishers and the prize money in dollars.
What pattern is indicated in the graph? What type of relationship exists between the two variables?



exponential decay

27. A club is selling hats and jackets as a fundraiser. Their budget is $1500 and they want to order at least 250 items. They must buy at least as many hats as they buy jackets. Each hat costs $5 and each jacket costs $8.

a) Write a system of inequalities to represent the situation. $5x + 8y \leq 1500$ $x \geq y$
$x + y \geq 250$

b) If the club buys 150 hats and 100 jackets, will the conditions be satisfied? $150 + 800 \leq 1500$ No
$1550 \leq 1500$