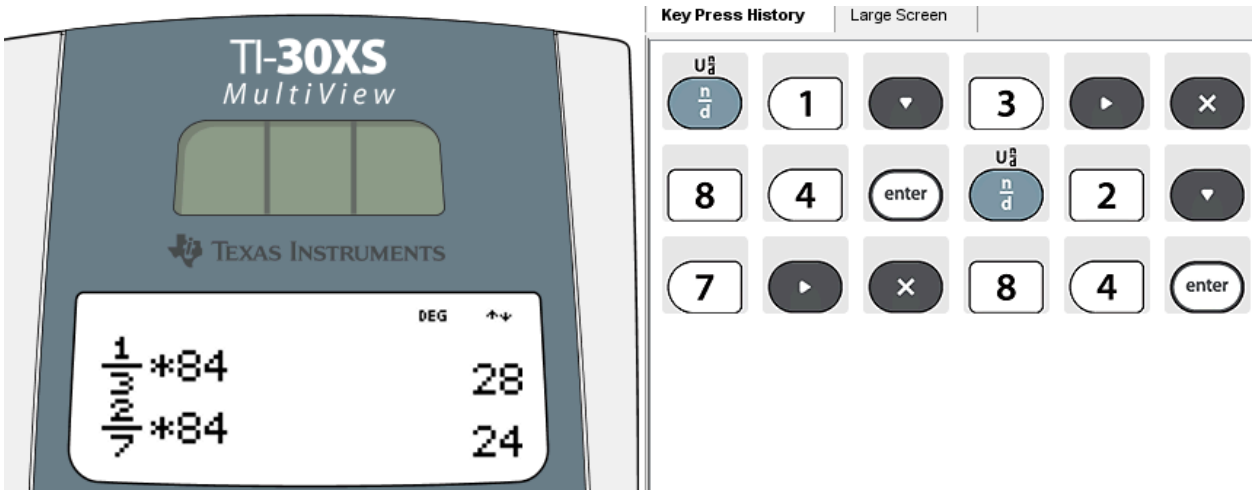
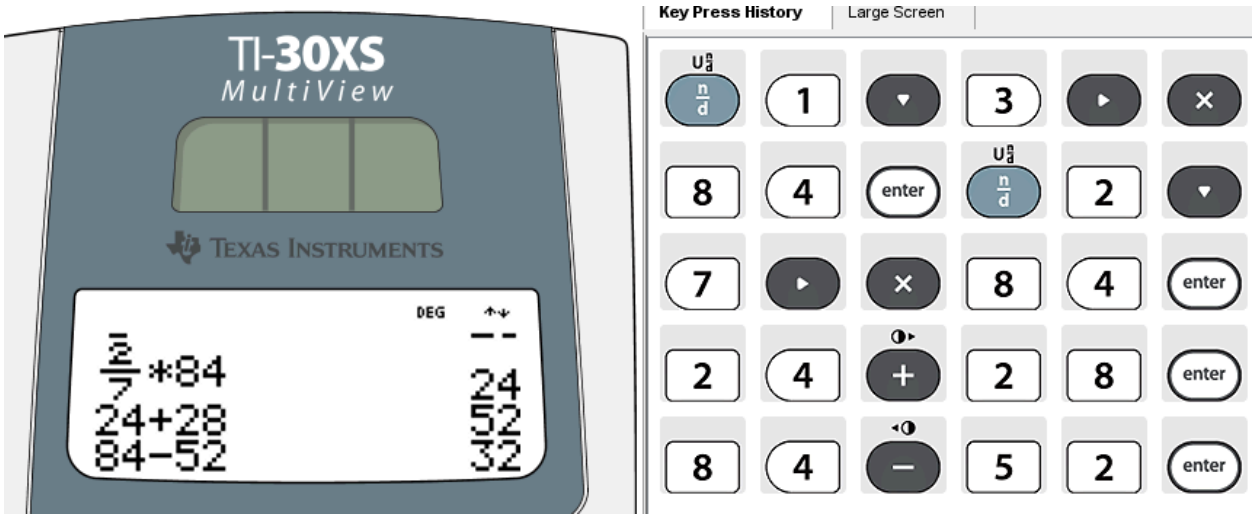
Examples

1.

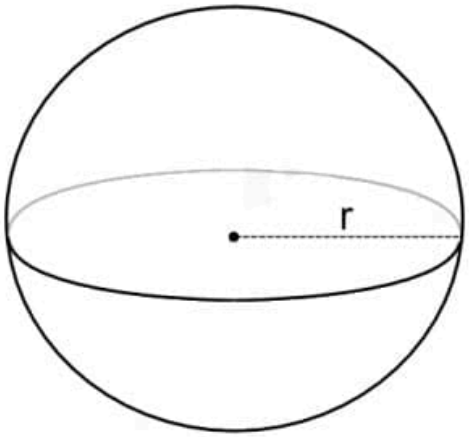
One third of the candidates for a job were 25 years old or younger. Two sevenths of the candidates were at least 50 years old. If 84 people applied for the job, how many were between 25 and 50?

- ○ 32
- ○ 28
- ○ 24
- ○ 33



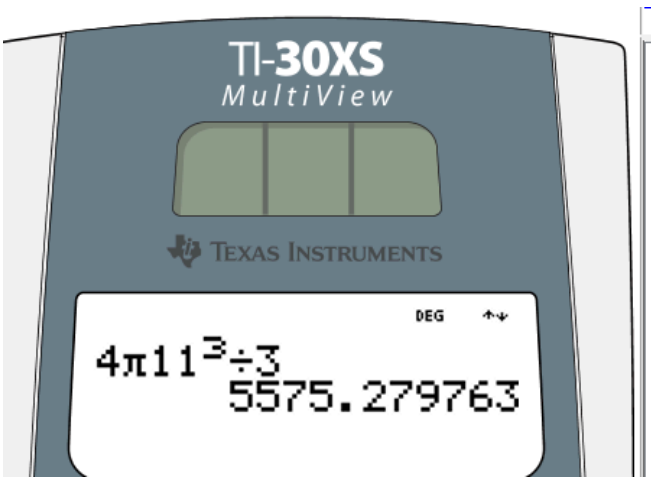


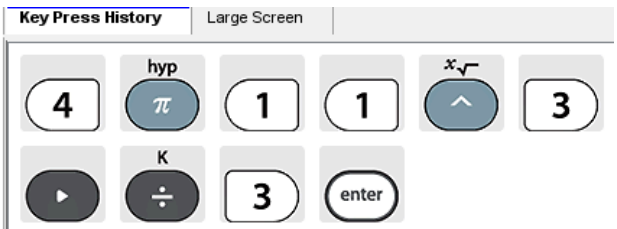
2.



The formula for the volume V of the sphere = $4(pi)r^3 / 3$. Which of the following is the closest approximation to the volume when r, the radius, is 11 inches?

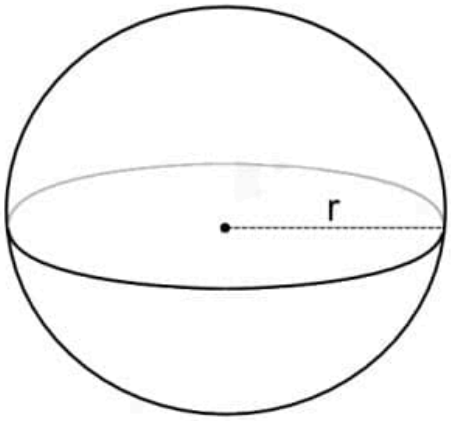
- ◯ 6000 cubic inches
- ◯ 5590 cubic inches
- ◯ 5573 cubic inches
- ◯ 5000 cubic inches





3.

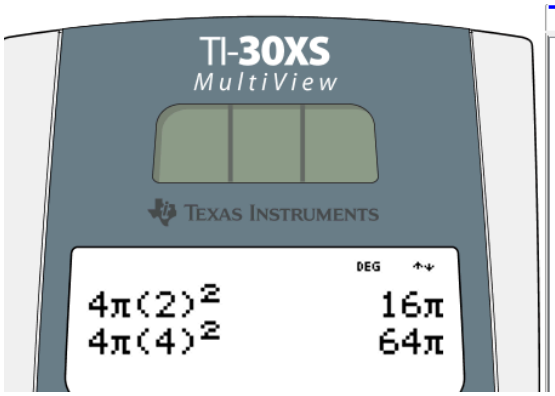
If the radius of the sphere were doubled by what factor would the surface area be enlarged?

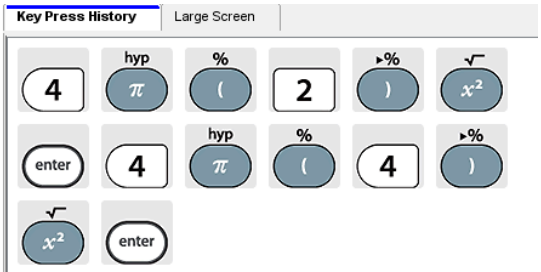


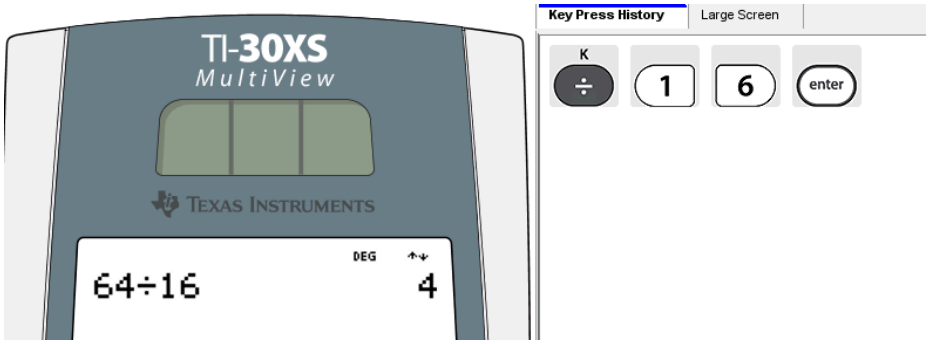
Note: The formula for the surface area S of the sphere = 4 x (pi) x r^2

- ○ 2
- ○ 4
- ○ 8

One way to solve this problem is to pick one value for the r and calculate the surface area. Then double that value and calculate the surface area again and compare the two values.



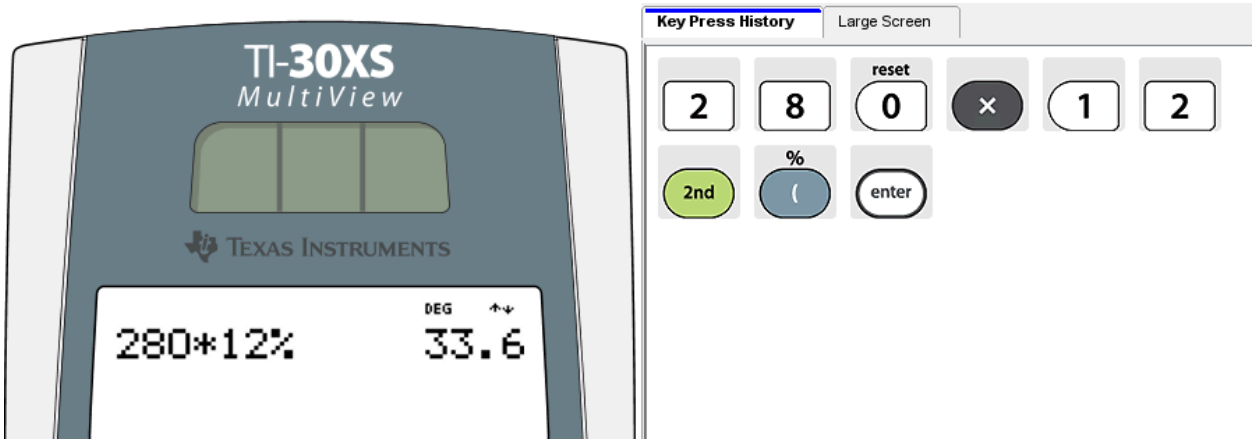




4.

There is a 12% sales tax. The pre-tax cost of a mobile phone is $280.
What is the tax payable on this mobile phone?

- ○ $28.56
- ○ $33.60
- ○ $312
- ○ $313.60

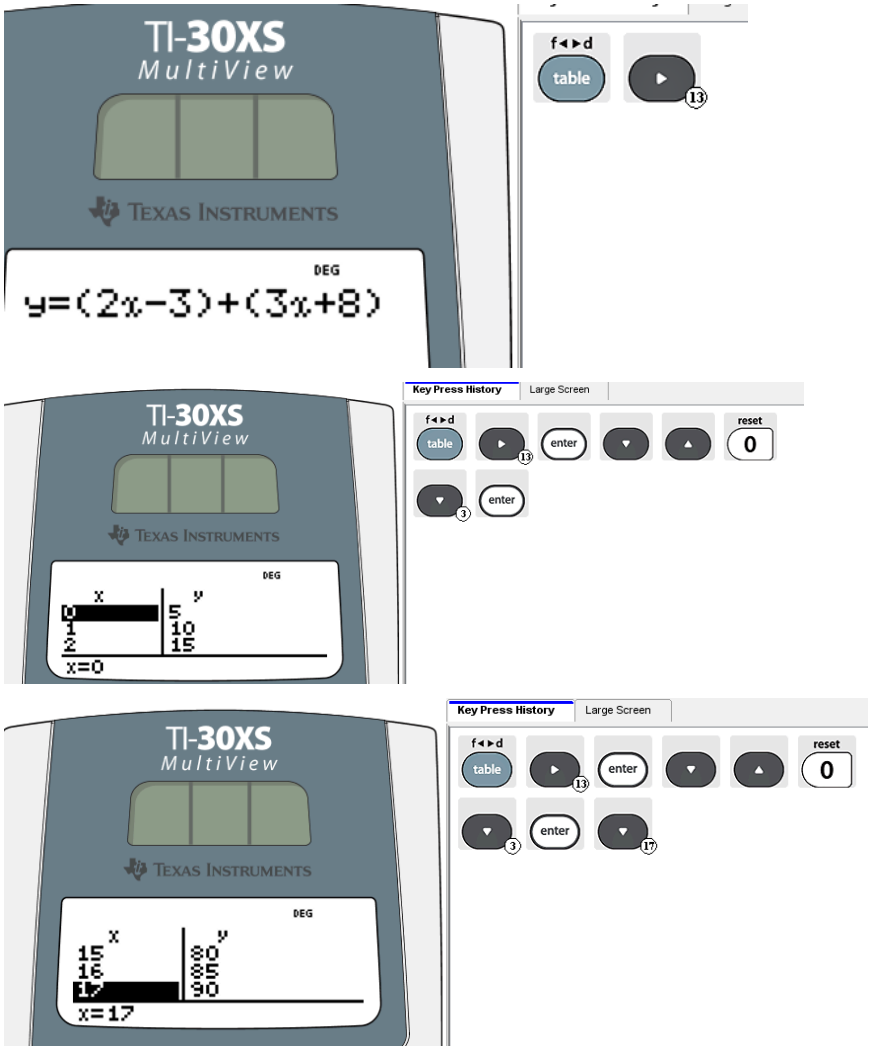


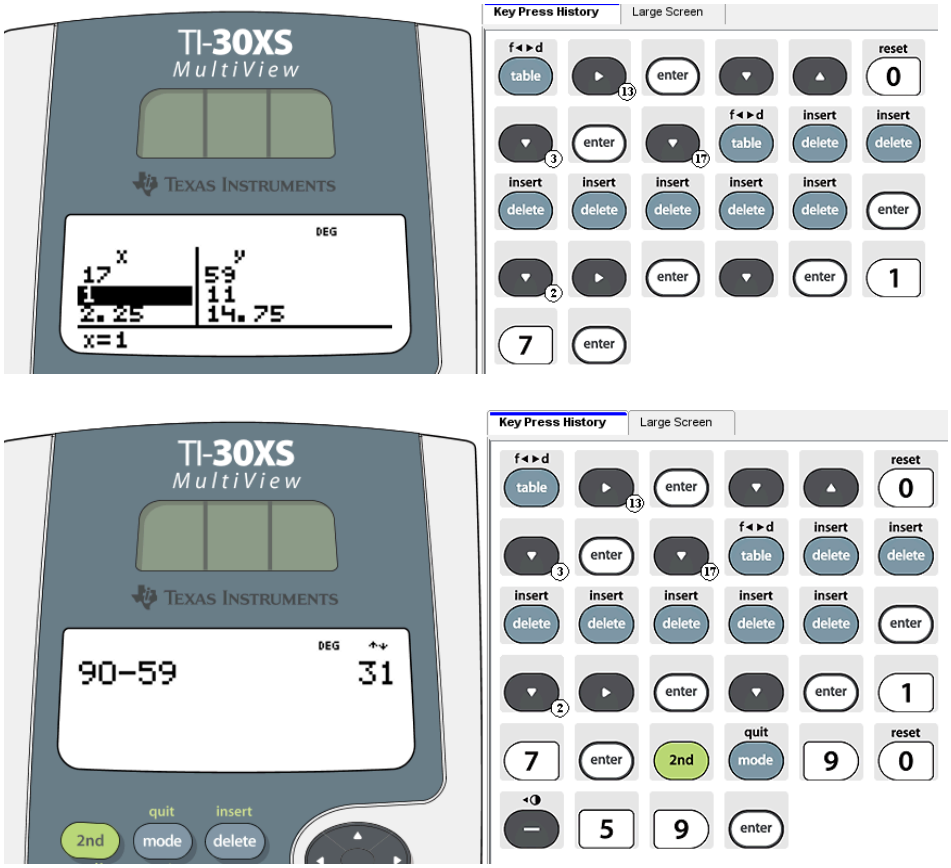
5.

9. Two complementary angles measure $(2x - 3)°$ and $(3x + 8)°$. What is the measurement of the two angles?

- ◯ 27°, 63°
- ◯ 35°, 55°
- ◯ 42°, 48°
- ◯ 31°, 59°

You are trying to find the value of x that makes the sum of the two expressions equal to 90. So 90 = (2x -3) + (3x + 8). Once you find the value of x that makes this true then you can find the value of each angle.





One angle measures 59 degrees, the other is 31 degrees.

6.

10. Although two chemical companies produce the same product, they follow different pricing models. The price of the chemical from company A follows the equation $y = 50 + 7.5x$, where y is the total cost of production while x is the number of liters produced. On the other hand, company B follows the equation $y = 30 + 9.5x$. How many liters must each company produce in order to have the same production costs?

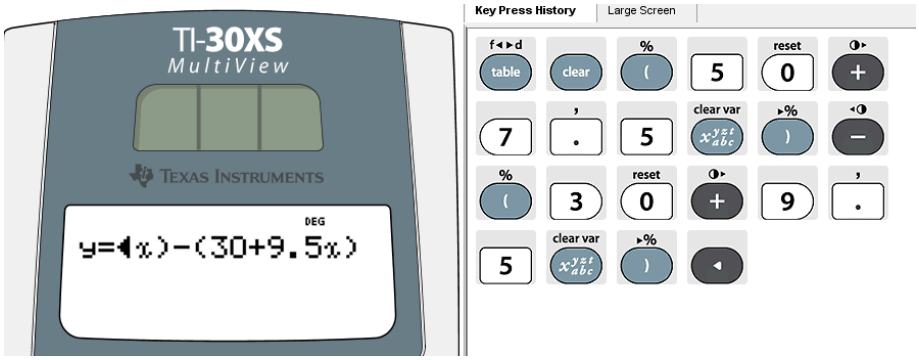
○ 25 ○ 10

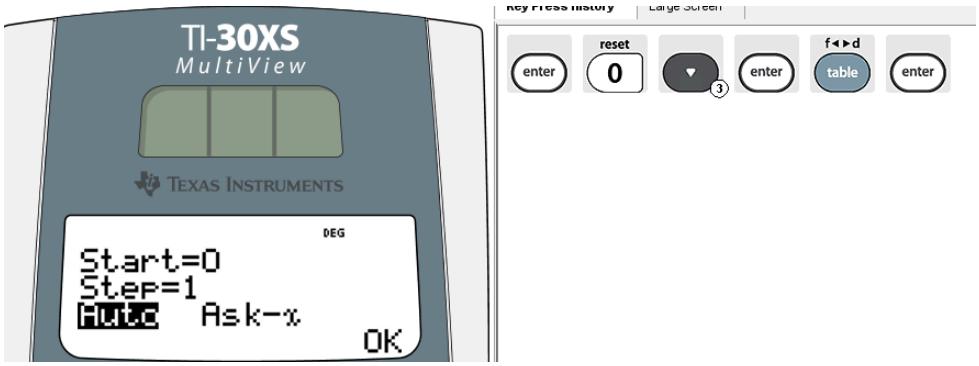
○ 20 ○ 15

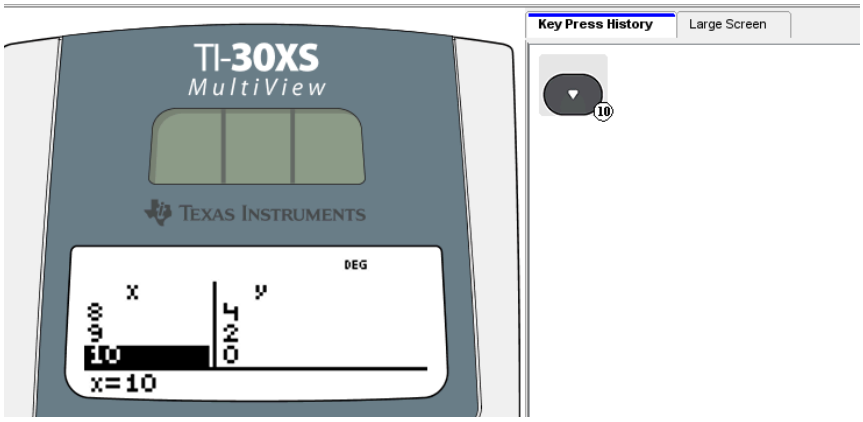
We want to find the value of x for which the expressions are equal.

50 + 7.5x = 30 + 9.5x OR

(50 + 7.5x) – (30 + 9.5x) = 0.







X = 10 is the solution.

7.

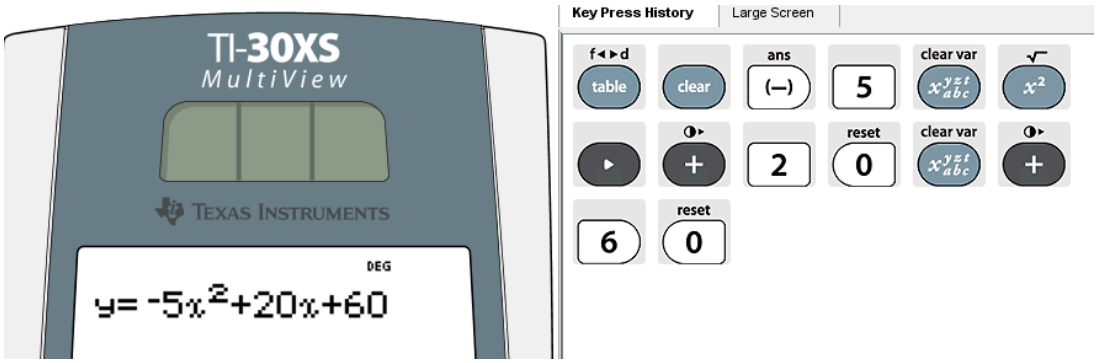
13. A boy kicked a ball from atop a building, throwing it in a direction that follows an inverted parabola. If the path of the ball can be modeled by the function, where *y* is the height in meters and *x* is the time in seconds, how long will it take for the ball to reach the ground?

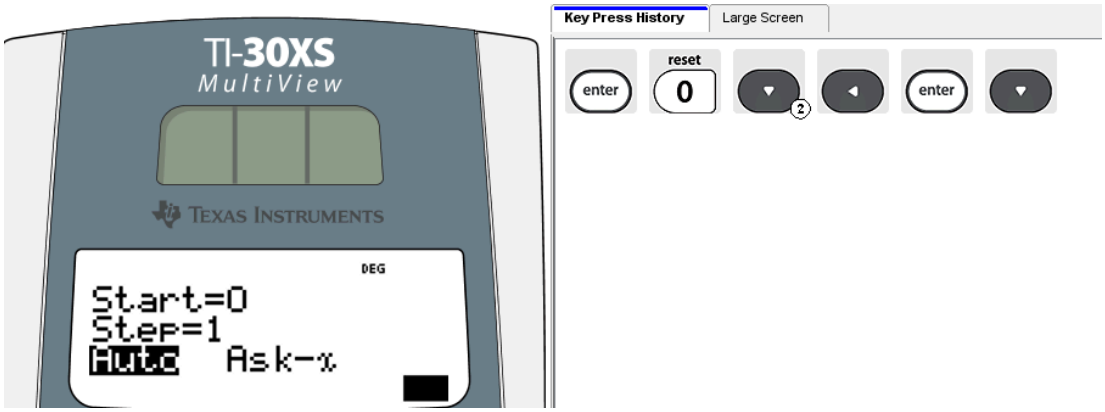
$y = -5x^2 + 20x + 60$

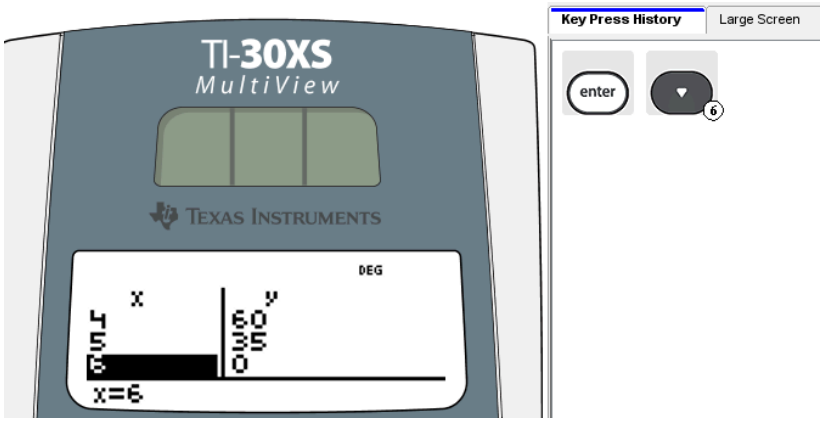
- ◯ 6 seconds
- ◯ 5 seconds
- ◯ 11 seconds
- ◯ 8 seconds

The ball hits the ground, when h = 0, so we have to solve the equation

$0 = -5x^2 + 20x + 60$







It will take 6 seconds.

8.

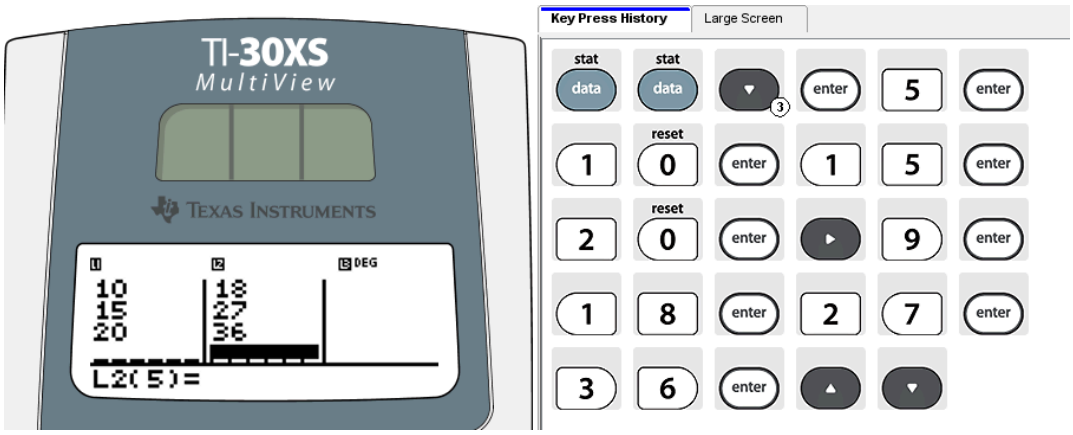
15. The table shows the proportional relationship between the number of hours, *x*, spent digging and the depth, *y*, of a hole in the ground. How many hours will it take to reach a depth of 49 meters?

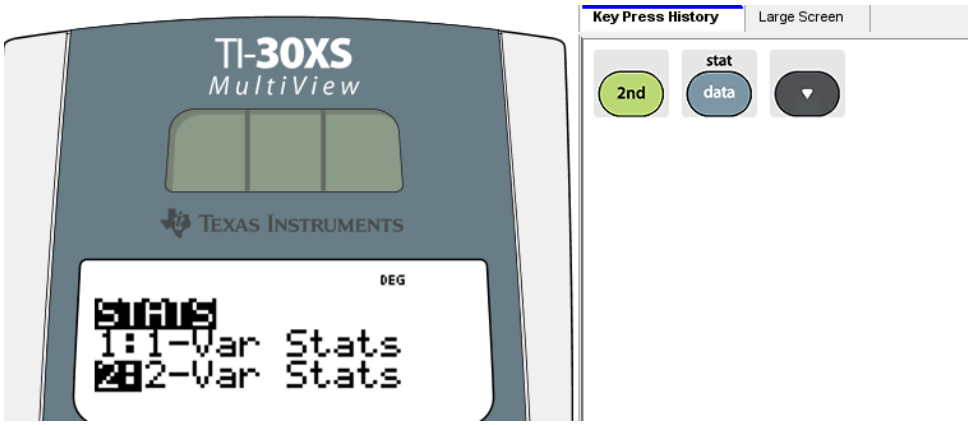
x (hours)	*y (meters)*
5	9
10	18
15	27
20	36

◯ 27.2 ◯ 25.5

◯ 26.2 ◯ 26.8

One way to solve this problem is to find the equation of best fit and then use that equation to create a table and find the x value that gives a y value of 49.


TI-30XS
MultiView
TEXAS INSTRUMENTS
L1 L2 DEG
10 18
15 27
20 36
L2(5)=
Key Press History
Large Screen
stat data
stat data
enter
5
reset 0
1
2
3
6
9
7
8


TI-30XS
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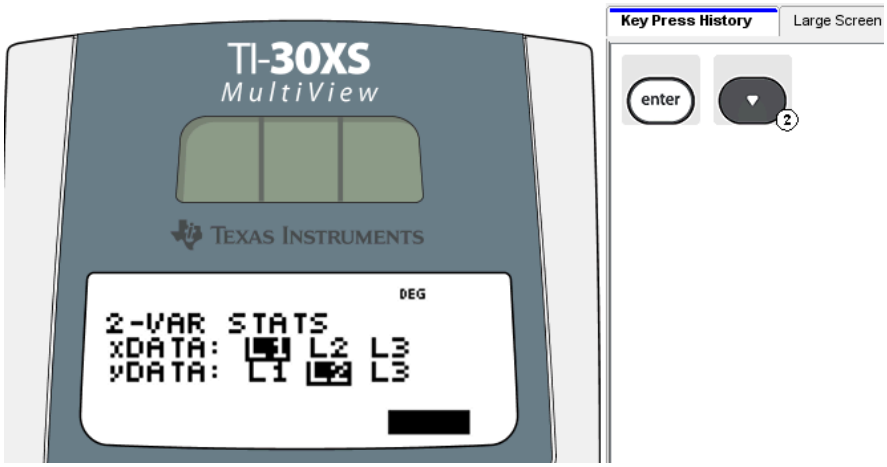
TEXAS INSTRUMENTS
DEG
STATS
1:1-Var Stats
2:2-Var Stats
Key Press History
Large Screen
2nd
stat data


TI-30XS
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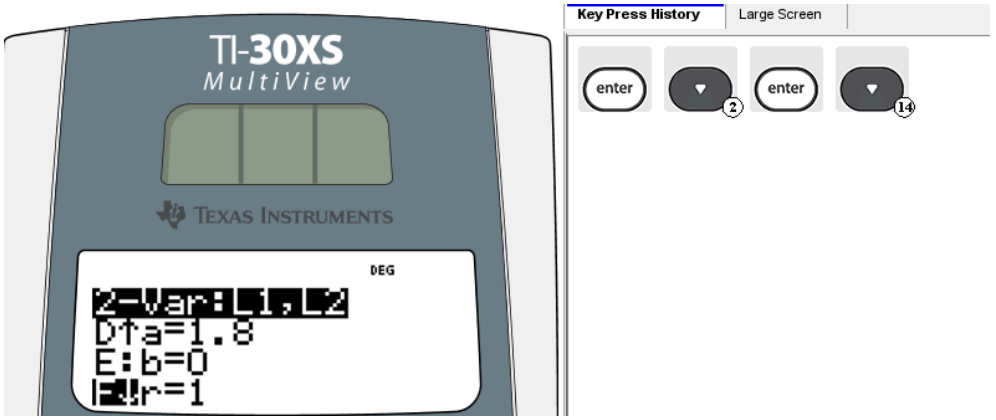
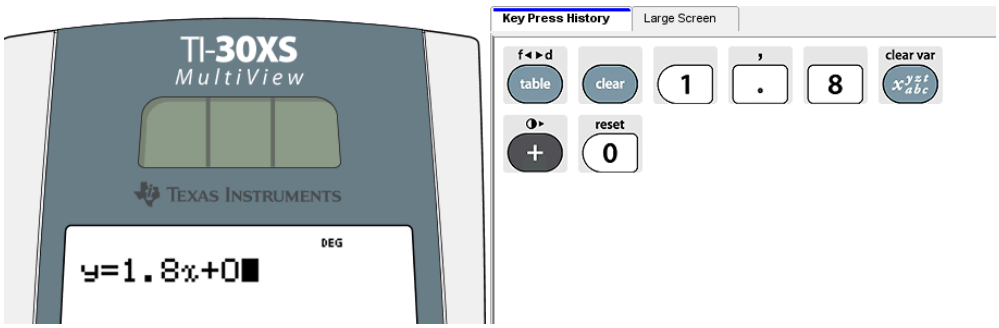
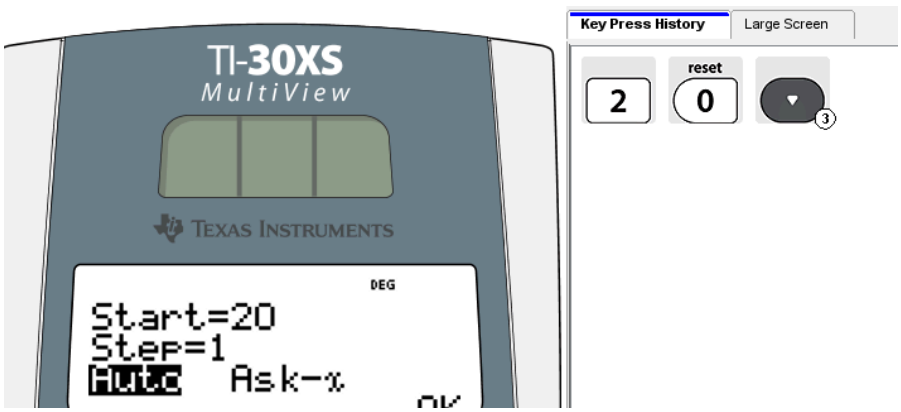
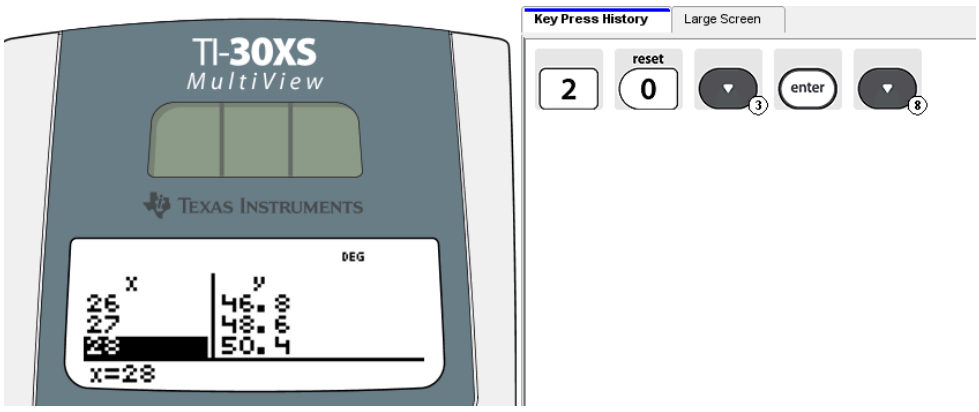
TEXAS INSTRUMENTS
DEG
2-VAR STATS
xDATA: L1 L2 L3
yDATA: L1 L2 L3
Key Press History
Large Screen
enter


TI-30XS
MultiView
TEXAS INSTRUMENTS
DEG
2-Var:L1,L2
Dta=1.8
E:b=0
r=1
Key Press History
Large Screen
enter
2
enter
14


TI-30XS
MultiView
TEXAS INSTRUMENTS
DEG
y=1.8x+0
Key Press History
Large Screen
f◂▸d
table
clear
1
,
.
8
clear var
reset
0

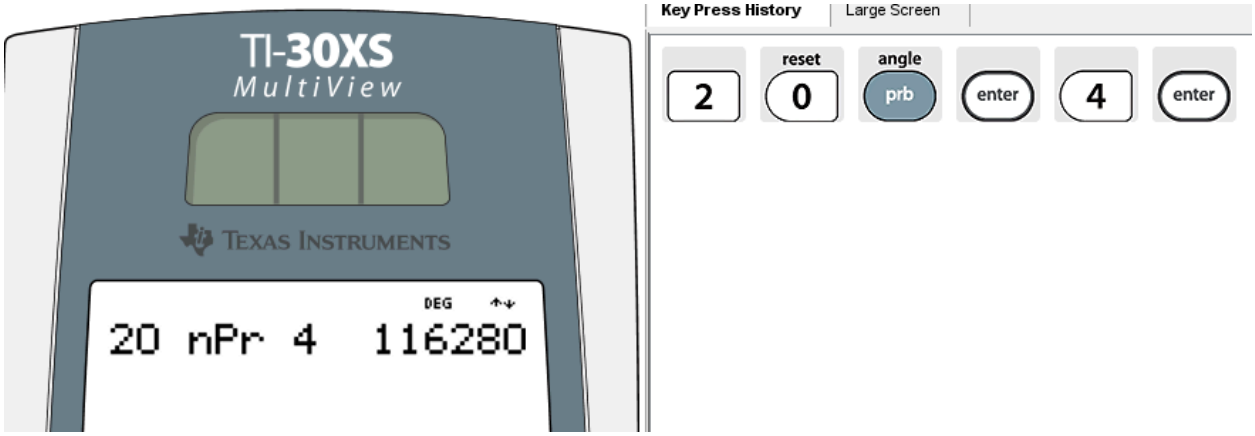

TI-30XS
MultiView
TEXAS INSTRUMENTS
DEG
Start=20
Step=1
Auto Ask-x
Key Press History
Large Screen
2
reset
0
3


TI-30XS
MultiView
TEXAS INSTRUMENTS
DEG
x
y
26
46.8
27
48.6
28
50.4
x=28
Key Press History
Large Screen
2
reset
0
3
enter
8

The answer lies between x = 27 and x = 28. Given the choices, the answer is 27.2.

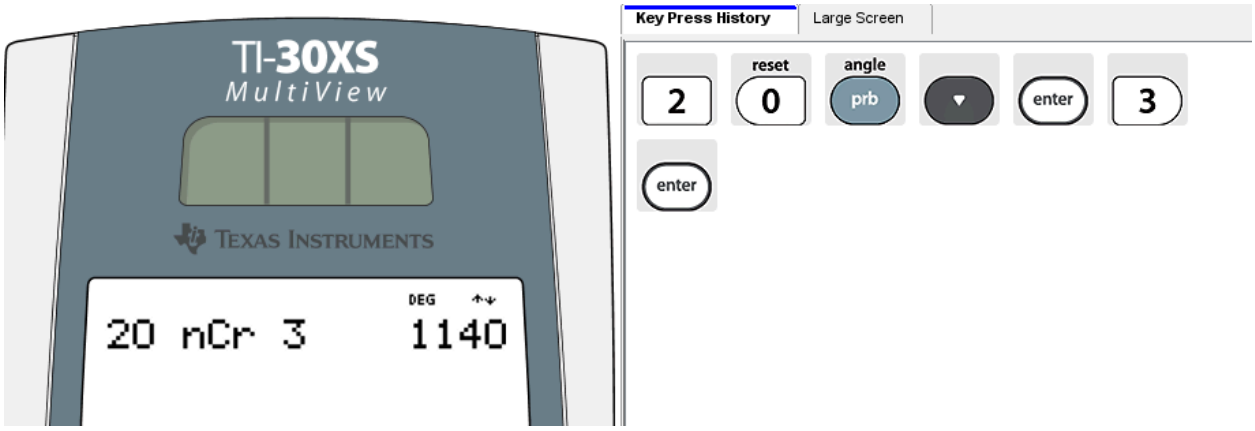
9. There are 20 people in a classroom forming to form a club. They need to choose a President, Vice President, Secretary and Treasurer. They also need to choose a team of 3 people to represent the club at the statewide meeting. How many different ways can they choose the officers? How many different ways can they choose the team?

Order matters when choosing officers, so it is a permutation.



There are 116,280 to choose officers.

Order does not matter when choosing a team, so it is a combination.



There are 1,140 ways to choose the team.