

Problem-Solving Strategies and Reasoning on the ACT® Exam

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Changing landscape of high-stakes testing...

› More and more colleges are going 'Test Optional'

› 265+ Colleges and Universities:

- University of Texas (Top 8%)
- University of Chicago
- University of Mississippi
- Kansas State University
- Wake Forest University
- Brandeis University
- George Washington University
- Texas A & M (Top 10%)
- University of Arizona

What is Test Optional?

- › SAT/ACT used only for placement and/or academic advising
- › SAT/ACT required only from out-of-state applicants
- › SAT/ACT may be required but considered only when minimum GPA and/or class rank is not met
- › SAT/ACT required for some programs

University of California Academic Council's Standardized Testing Task Force

Two key takeaways (essay was not recommended)

- 1. The tests help identify candidates who will succeed**
- 2. The tests do not exacerbate underrepresentation in admission**

ACT Individual Section Retesting October 2020

- › Computer-based testing (CBT) on National test dates
- › Faster Scoring (2 days, not 2 weeks)
- › Super-scoring reports (ACT states super-scores are valid)
- › How will universities respond?

Test Information Release (TIR)

- › Additional resource offered by ACT
 - Available for April, June, and December National tests
 - Copy of test booklet
 - Student's responses
 - Correct responses
 - \$22 additional fee

- › Valuable resource for students planning on taking more than one ACT

ACT Strategy: Only do as much work as needed to get the correct answer

How?

- › Glance at the answers
- › Eliminate

Glance at the answers & eliminate

(What is similar about the answers?)

1. When $x \neq 0$ and $y \neq 0$, which expression is equivalent to:

A. $-49x^3y^2$

B. $-63x^3y^2$

C. $-8x^5y^4$

D. $-8x^4y^3$

E. $-8x^3y^2$

$$-\frac{56x^2y^3}{7x^{-1}y}$$

Glance at the answers & eliminate

(Look at the numeric values first)

1. When $x \neq 0$ and $y \neq 0$, which expression is equivalent to:

A. $-49x^3y^2$

B. $-63x^3y^2$

C. $-8x^5y^4$

D. $-8x^4y^3$

E. $-8x^3y^2$

$$-\frac{56x^2y^3}{7x^{-1}y}$$

Glance at the answers & eliminate

(Look at the numeric values first)

1. When $x \neq 0$ and $y \neq 0$, which expression is equivalent to:

~~A.~~ ~~-49~~ x^3y^2

~~B.~~ ~~-63~~ x^3y^2

C. $-8x^5y^4$

D. $-8x^4y^3$

E. $-8x^3y^2$

$$\frac{\cancel{856}x^2y^3}{\cancel{17}x^{-1}y}$$

Glance at the answers & eliminate

(Look at the variable, y)

1. When $x \neq 0$ and $y \neq 0$, which expression is equivalent to:

~~A.~~ ~~$-49x^3y^2$~~

~~B.~~ ~~$-63x^3y^2$~~

C. $-8x^5y^4$

D. $-8x^4y^3$

E. $-8x^3y^2$

$$\frac{\cancel{8}5\cancel{6}x^2y^3}{\cancel{1}7x^{-1}y}$$

Glance at the answers & eliminate

(Look at the variable, y)

1. When $x \neq 0$ and $y \neq 0$, which expression is equivalent to:

~~A.~~ ~~$-49x^3y^2$~~

~~B.~~ ~~$-63x^3y^2$~~

~~C.~~ ~~$-8x^5y^4$~~

~~D.~~ ~~$-8x^4y^3$~~

E. $-8x^3y^2$

$$\frac{856x^2y^3}{17x^{-1}y}$$

(Handwritten annotations: blue slashes on 8, 5, 6, 1, 7; red slashes on 2, 3, 4, 2; red superscripts on 2, 3, 2)

Glance at the answers & eliminate

(What do you notice about the distractors?)

1. When $x \neq 0$ and $y \neq 0$, which expression is equivalent to:

~~A.~~ $-49x^3y^2$

~~B.~~ $-63x^3y^2$

~~C.~~ $-8x^5y^4$

~~D.~~ $-8x^4y^3$

E. $-8x^3y^2$

$$\frac{856x^2y^3}{17x^{-1}y}$$

(Handwritten annotations: blue slashes on 8, 5, 6, 1, 7; red slashes on x^2, y^3, y; red superscript 2 on the second y)

Glance at the answers & eliminate

(Look for similarities in the answers)

2. When Katie went to sleep, the temperature was $36^{\circ}F$. When Katie woke up, the temperature was $-8^{\circ}F$. Letting $+$ mean a rise in temperature and $-$ mean a drop in temperature, what was the change in temp from when Katie went to sleep and when she woke up?

F. $-44^{\circ}F$

G. $-28^{\circ}F$

H. $+4^{\circ}F$

J. $+28^{\circ}F$

K. $+44^{\circ}F$

Glance at the answers & eliminate

π

2. When Katie went to sleep, the temperature was $36^{\circ}F$. When Katie woke up, the temperature was $-8^{\circ}F$. Letting $+$ mean a rise in temperature and $-$ mean a drop in temperature, what was the change in temp from when Katie went to sleep and when she woke up.

F. $-44^{\circ}F$

G. $-28^{\circ}F$

~~H. $+4^{\circ}F$~~

~~J. $+28^{\circ}F$~~

~~K. $+44^{\circ}F$~~

Glance at the answers & eliminate (Eliminating protects you!)

2. When Katie went to sleep, the temperature was $36^{\circ}F$. When Katie woke up, the temperature was $-8^{\circ}F$. Letting $+$ mean a rise in temperature and $-$ mean a drop in temperature, what was the change in temp from when Katie went to sleep and when she woke up.

F. $-44^{\circ}F$

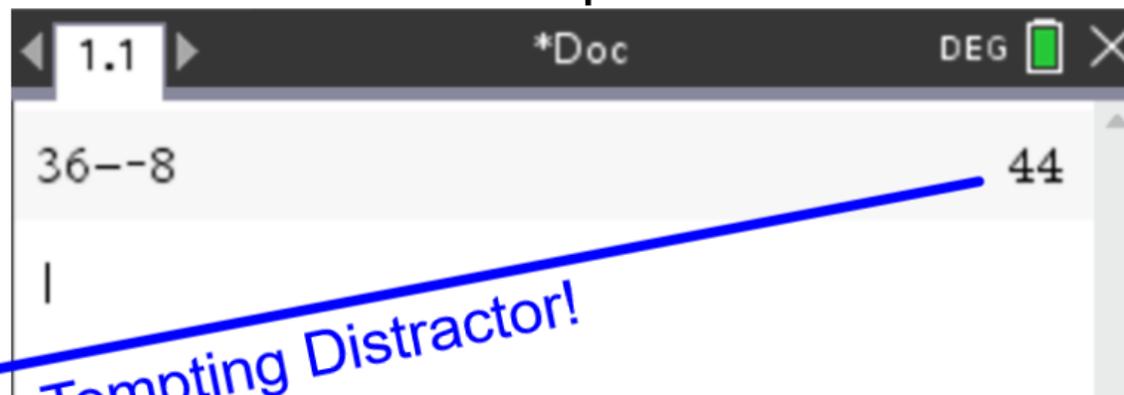
G. $-28^{\circ}F$

H. $+4^{\circ}F$

J. $+28^{\circ}F$

K. $+44^{\circ}F$

TI-Nspire

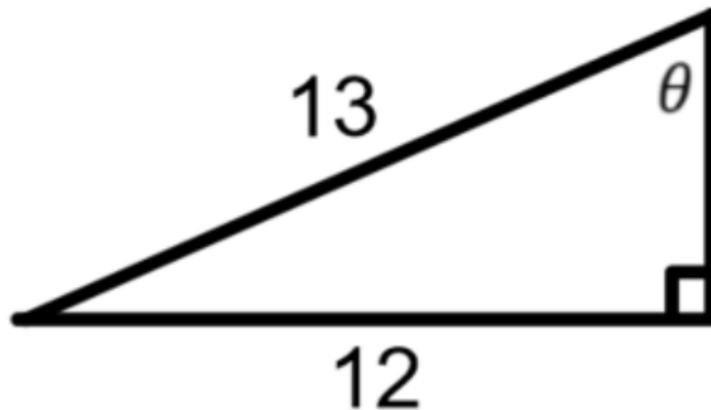


Tempting Distractor!

Glance at the answers & eliminate

(Which answers can you eliminate?)

3. A right triangle is shown. What is the value of $\cos(\theta)$?



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

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

H. $\frac{12}{13}$

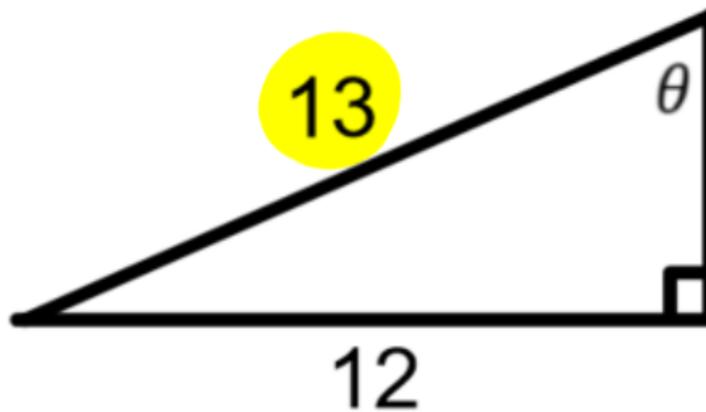
J. $\frac{13}{12}$

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

Glance at the answers & eliminate

(The denominator has to be 13)

3. A right triangle is shown. What is the value of $\cos(\theta)$?



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

~~G.~~ $\frac{5}{12}$

H. $\frac{12}{13}$

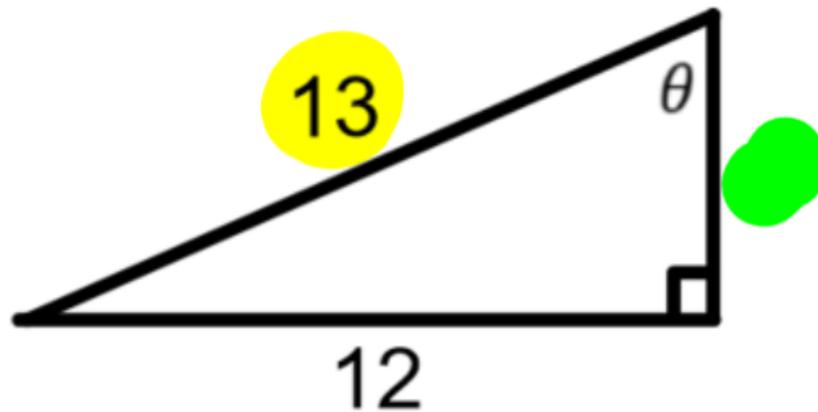
~~J.~~ $\frac{13}{12}$

~~K.~~ $\frac{13}{5}$

Glance at the answers & eliminate

(Unnecessary to find the other length)

3. A right triangle is shown. What is the value of $\cos(\theta)$?



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

~~G.~~ $\frac{5}{12}$

H. $\frac{12}{13}$

~~J.~~ $\frac{13}{12}$

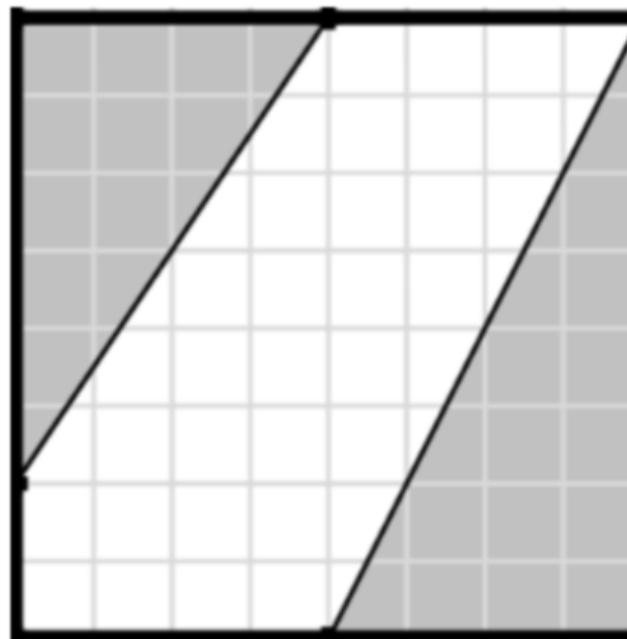
~~K.~~ $\frac{13}{5}$

Glance at the answers & eliminate

(Any answers you can eliminate?)

4. An 8×8 square grid shown below is divided into 64 equal squares, each with a side length of 1 cm. What fractional part of the 8×8 square grid is shaded?

- A. $\frac{3}{4}$
- B. $\frac{2}{3}$
- C. $\frac{7}{16}$
- D. $\frac{5}{8}$
- E. $\frac{9}{16}$

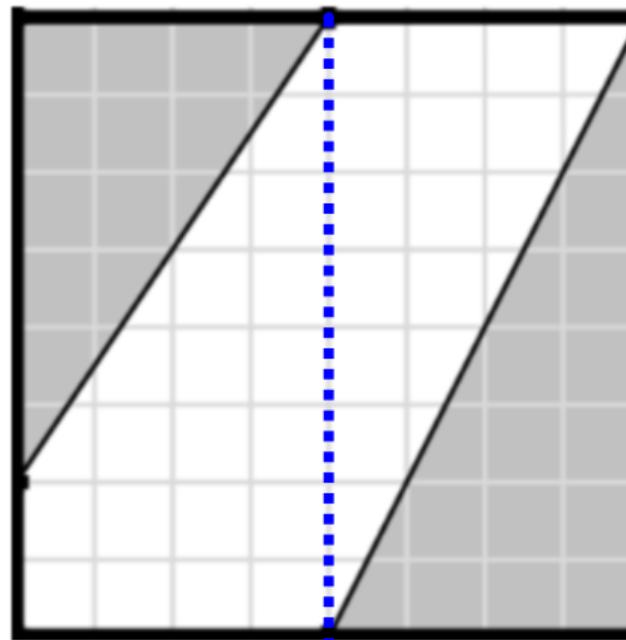


Glance at the answers & eliminate

(Less than half is shaded)

4. An 8×8 square grid shown below is divided into 64 equal squares, each with a side length of 1 cm. What fractional part of the 8×8 square grid is shaded?

- ~~A.~~ $\frac{3}{4}$
- ~~B.~~ $\frac{2}{3}$
- C. $\frac{7}{16}$
- ~~D.~~ $\frac{5}{8}$
- ~~E.~~ $\frac{9}{16}$

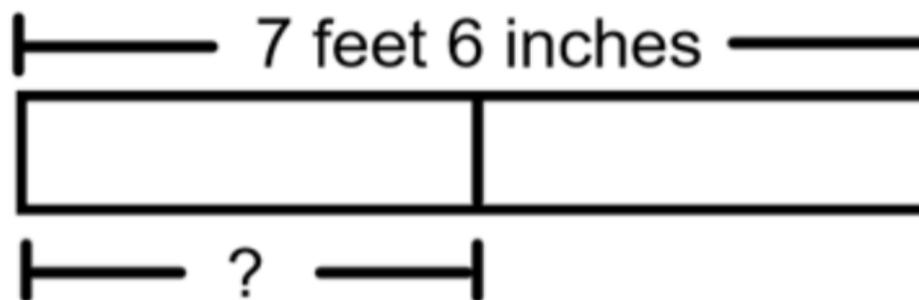


Glance at the answers & eliminate

(Which answers can you eliminate?)

5. In the figure below, a board 7 feet 6 inches long is cut into 2 equal parts. What is the length, to the nearest inch, of each part?

- F. 3 feet 5 inches
- G. 3 feet 8 inches
- H. 3 feet 9 inches
- J. 4 feet 3 inches
- K. 4 feet 9 inches



Glance at the answers & eliminate

(Which answers can you eliminate?)

5. In the figure below, a board 7 feet 6 inches long is cut into 2 equal parts. What is the length, to the nearest inch, of each part?

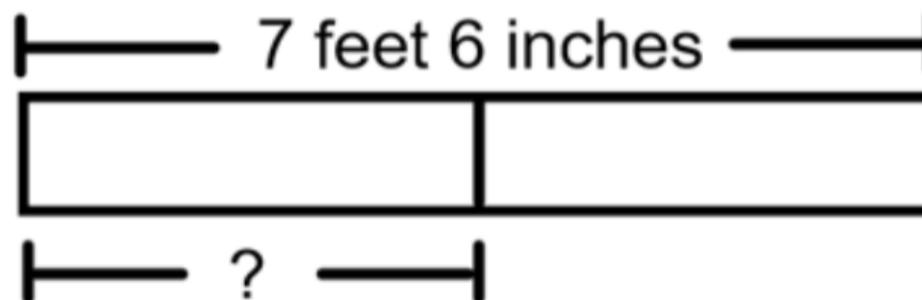
~~F.~~ 3 feet 5 inches $6'10''$

G. 3 feet 8 inches

H. 3 feet 9 inches

~~J.~~ 4 feet 3 inches $8'6''$

~~K.~~ 4 feet 9 inches $9'$



Glance at the answers & eliminate

(Which answers can you eliminate?)

5. In the figure below, a board 7 feet 6 inches long is cut into 2 equal parts. What is the length, to the nearest inch, of each part?

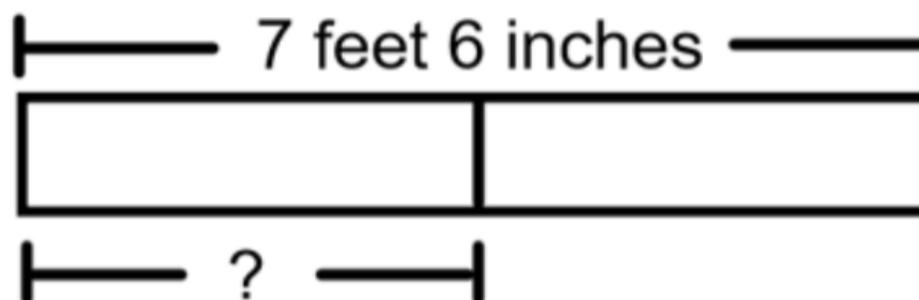
~~F.~~ 3 feet 5 inches

G. 3 feet 8 inches

H. 3 feet 9 inches

~~J.~~ 4 feet 3 inches

~~K.~~ 4 feet 9 inches



$6'10''$
 $8'6''$
 $9'$

$18 \text{ inches} = 1 \text{ foot} + 6 \text{ inches}$

Glance at the answers & eliminate

(Which answers can you eliminate?)

6. For real numbers a , b , and c such that $a > b > c$ and $b < 0$, which of the statements must always be true?

I. $|a| > |b|$

II. $|b| < |c|$

III. $|b| > |a|$

A. I only

B. II only

C. III only

D. I and III only

E. I, II, and III

Glance at the answers & eliminate (Substitute numbers)

6. For real numbers a , b , and c such that $a > b > c$ and $b < 0$, which of the statements must always be true?

$$3 > -1 > -2$$

I. $|a| > |b|$

II. $|b| < |c|$

~~III.~~ $|b| > |a|$ **False**

A. I only

B. II only

~~C.~~ III only

~~D.~~ I and III only

~~E.~~ I, II, and III

Glance at the answers & eliminate

(Substitute NEW numbers)

6. For real numbers a , b , and c such that $a > b > c$ and $b < 0$, which of the statements must always be true?

- ~~I.~~ $|a| > |b|$ **False** $3 > -1 > -2$
 $3 > -4 > -7$
- II. $|b| < |c|$
- ~~III.~~ $|b| > |a|$ **False**

- ~~A.~~ I only
- B.** II only
- ~~C.~~ III only
- ~~D.~~ I and III only
- ~~E.~~ I, II, and III

Let your calculator do the work

(How can you enter this in your calculator?)

7. For $x = -3$, what is the value of $2x^2 - 9x$?
- A. -63
 - B. -45
 - C. -9
 - D. 9
 - E. 45

Let your calculator do the work

(Use the STO command)

7. For $x = -3$, what is the value of $2x^2 - 9x$?
- A. -63
 - B. -45
 - C. -9
 - D. 9
 - E. 45

TI-Nspire

Press ctrl var to **STO**

Expression	Value
$-3 \rightarrow x$	-3
$2 \cdot x^2 - 9 \cdot x$	45

Let your calculator do the work

(Use the STO command)

7. For $x = -3$, what is the value of $2x^2 - 9x$?

A. -63

B. -45

C. -9

D. 9

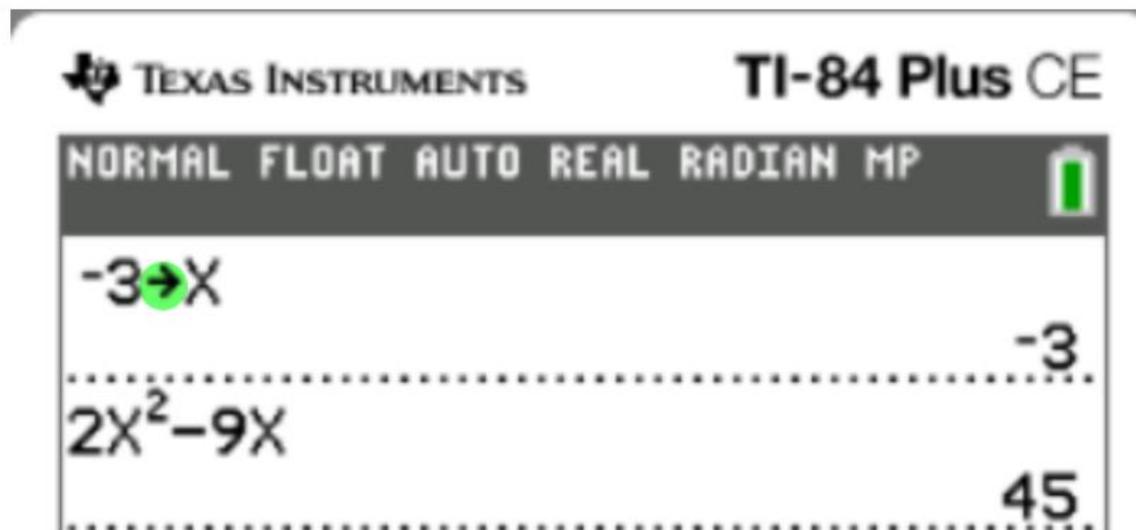
E. 45

TI-84

Press

sto →

to **STO**



Let your calculator do the work

(Use the STO command)

7. For $x = -3$, what is the value of $2x^2 - 9x$?

A. -63

B. -45

C. -9

D. 9

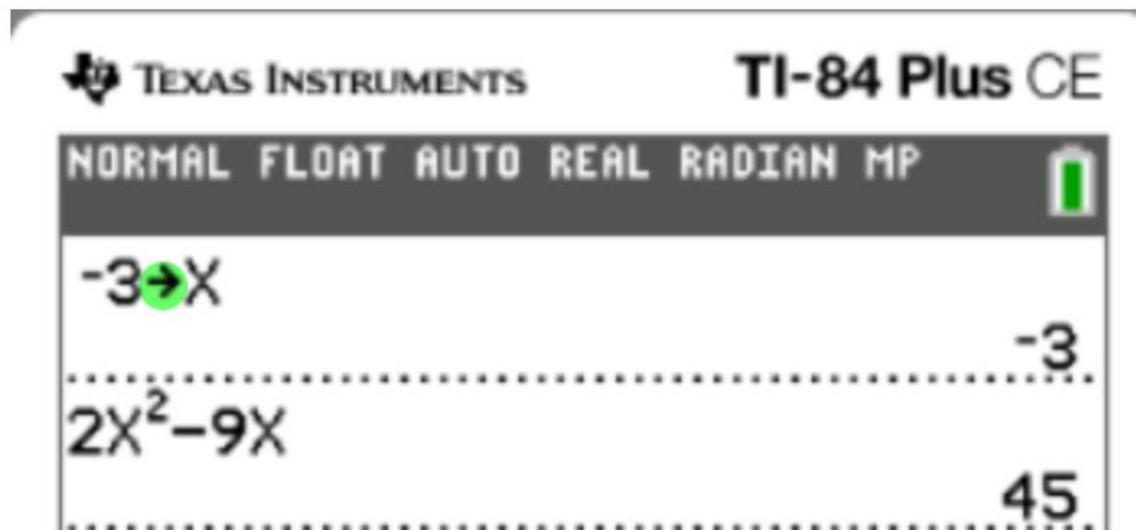
E. 45

TI-84

Press

sto →

to **STO**



Let your calculator do the work

(Use the “such that” command...TI-Nspire)

7. For $x = -3$, what is the value of $2x^2 - 9x$?

A. -63

B. -45

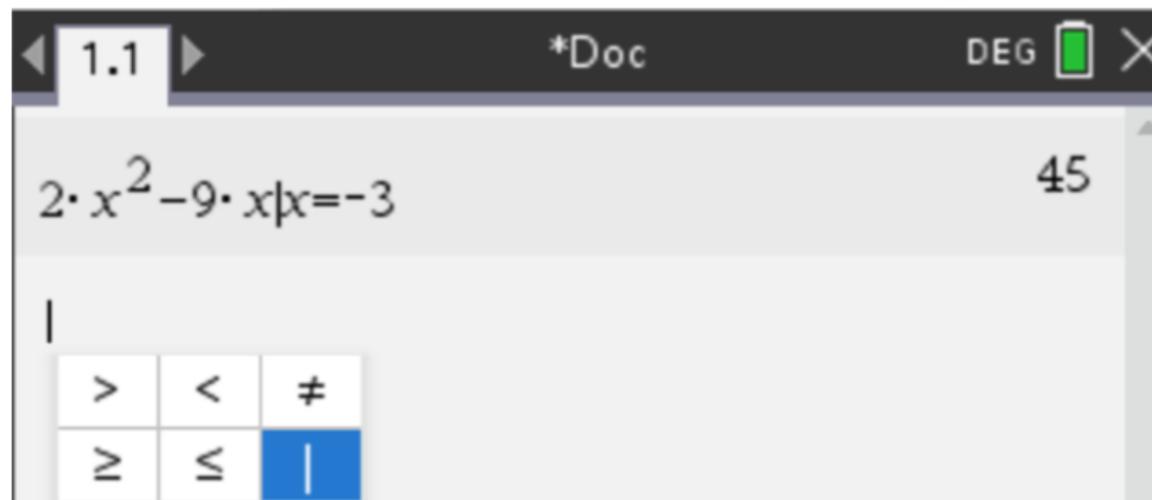
C. -9

D. 9

E. 45

TI-Nspire

Press **ctrl** **=** and choose **|**



Let your calculator do the work

(Use “Graph Trace” and enter a value)

7. For $x = -3$, what is the value of $2x^2 - 9x$?

A. -63

B. -45

C. -9

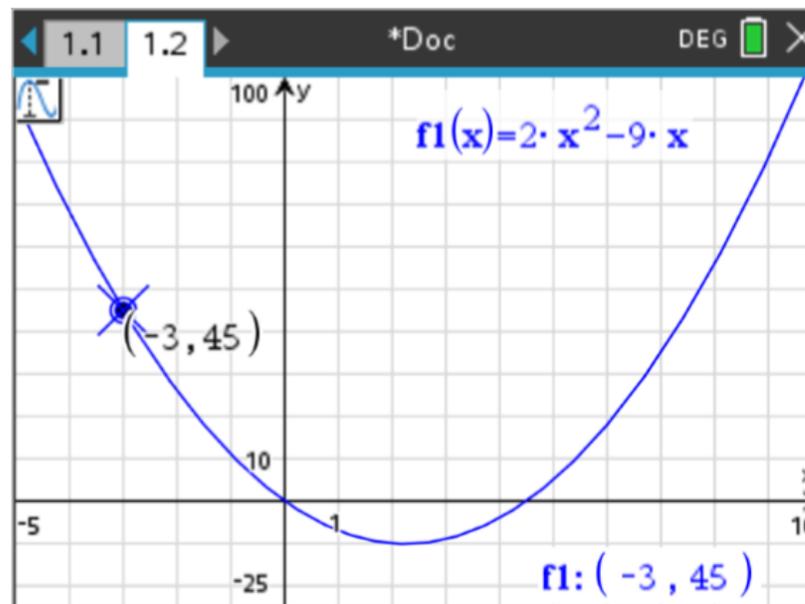
D. 9

E. 45

TI-Nspire

Press `menu` > Trace > Graph Trace

and enter -3



Let your calculator do the work

(Use "Graph Trace" and enter a value)

7. For $x = -3$, what is the value of $2x^2 - 9x$?

A. -63

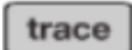
B. -45

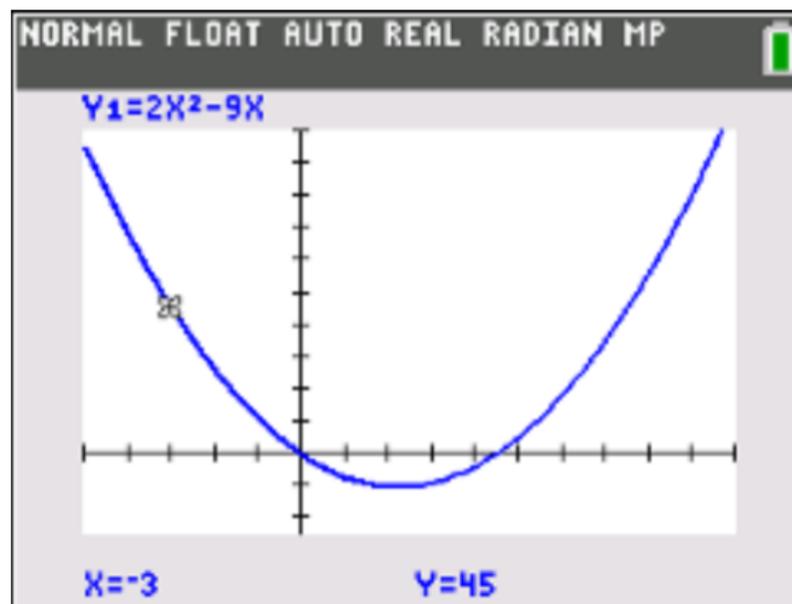
C. -9

D. 9

E. 45

TI-84

Press  and enter -3



Let your calculator do the work (Using the table)

7. For $x = -3$, what is the value of $2x^2 - 9x$?

A. -63

B. -45

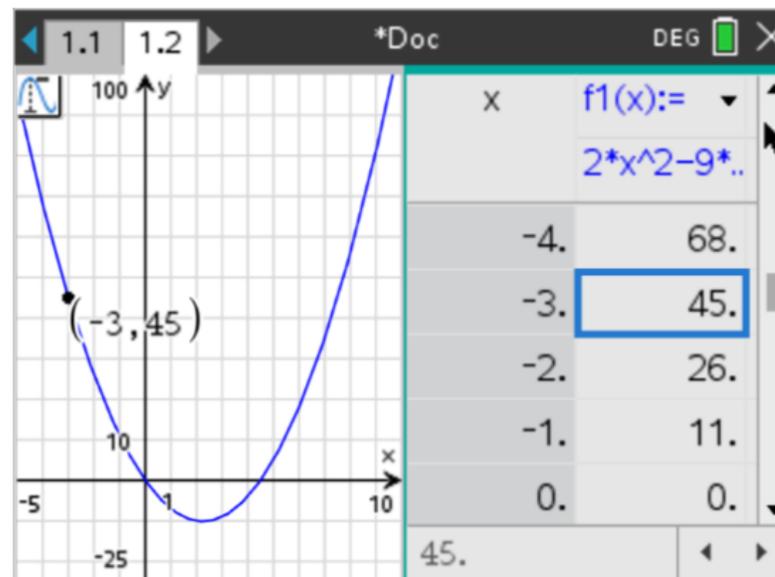
C. -9

D. 9

E. 45

TI-Nspire

Press **ctrl** **T** and scroll to find the answer



Let your calculator do the work

(Using the table)

7. For $x = -3$, what is the value of $2x^2 - 9x$?

A. -63

B. -45

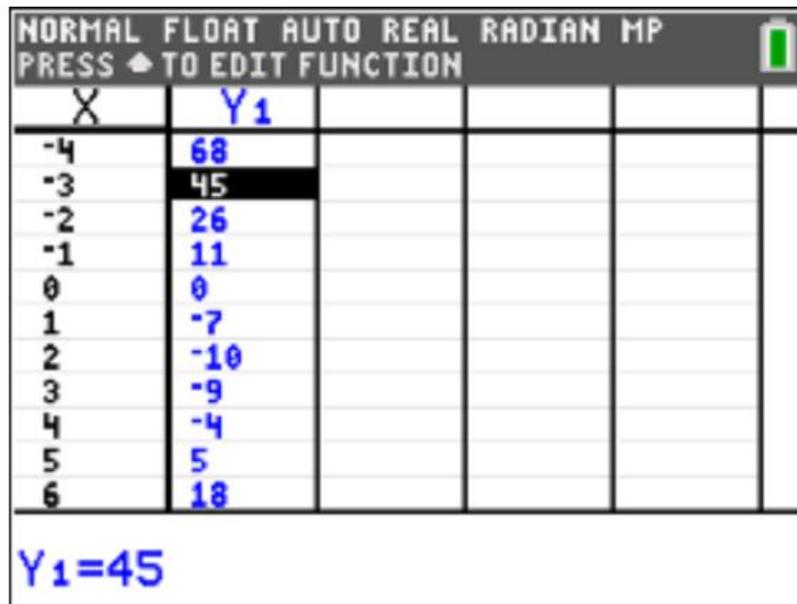
C. -9

D. 9

E. 45

TI-84

Press   and scroll to find the answer



X	Y1			
-4	68			
-3	45			
-2	26			
-1	11			
0	0			
1	-7			
2	-10			
3	-9			
4	-4			
5	5			
6	18			

$Y_1=45$

Glance at the answers & eliminate

(Which answers could you eliminate?)

7. For $x = -3$, what is the value of $2x^2 - 9x$?
- A. -63
 - B. -45
 - C. -9
 - D. 9
 - E. 45

Glance at the answers & eliminate

(Which answers could you eliminate?)

7. For $x = -3$, what is the value of $2x^2 - 9x$?

~~A.~~ -63

~~B.~~ -45

~~C.~~ -9

D. 9

E. 45

$2x^2 - 9x$

Positive — Negative = Positive

Let your calculator do the work (Using the LCM command)

8. What is the least common denominator of these fractions:

$$\frac{4}{15}, \frac{1}{24}, \text{ and } \frac{3}{51} ?$$

- A. 360
- B. 765
- C. 2,040
- D. 6,120
- E. 18,360

Let your calculator do the work

(Using the LCM command)

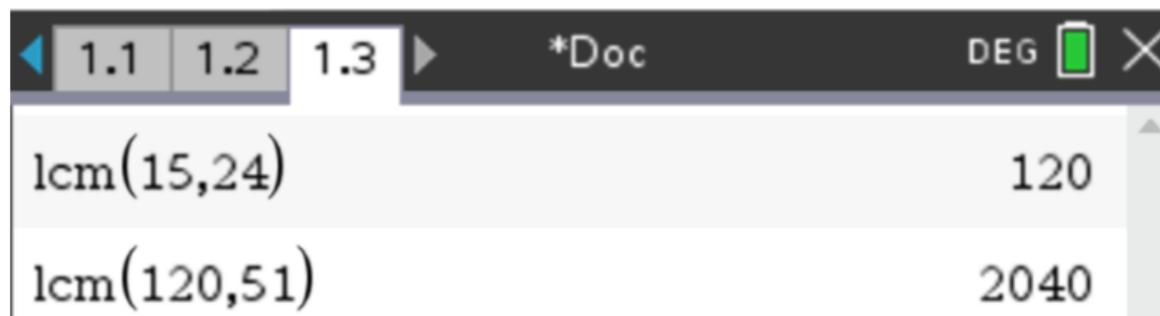
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- D. 6,120
- E. 18,360

TI-Nspire

Press  > Number > Least Common Multiple



The screenshot shows a TI-Nspire calculator interface with a document window titled '*Doc'. The window has tabs for 1.1, 1.2, and 1.3. The main display area shows two rows of calculations:

$\text{lcm}(15,24)$	120
$\text{lcm}(120,51)$	2040

Let your calculator do the work

(Using the LCM command)

8. What is the least common denominator of these fractions:

$$\frac{4}{15}, \frac{1}{24}, \text{ and } \frac{3}{51} ?$$

- A. 360
- B. 765
- C. 2,040
- D. 6,120
- E. 18,360

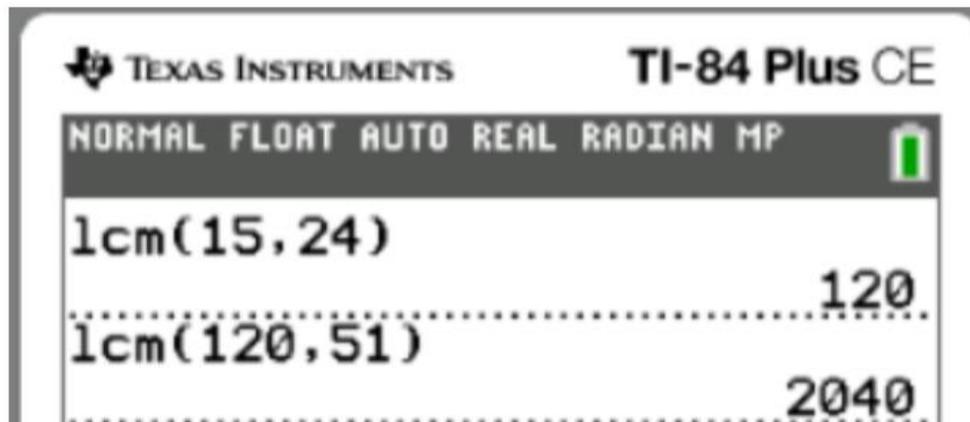
TI-84

Press

math



8



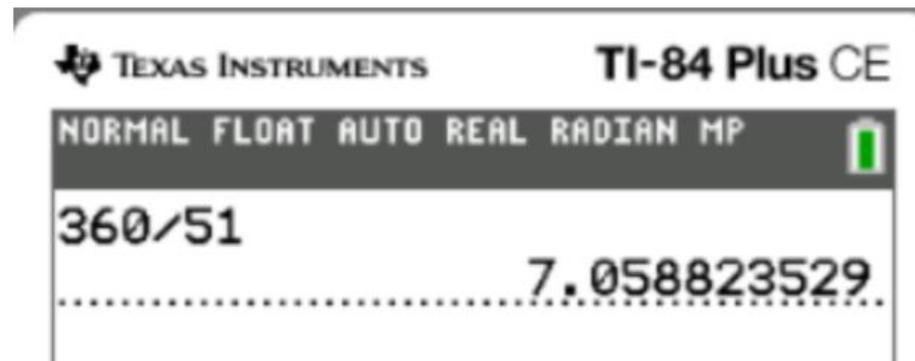
Let your calculator do the work (or work backwards)

8. What is the least common denominator of these fractions:

$$\frac{4}{15}, \frac{1}{24}, \text{ and } \frac{3}{51} ?$$

TI-84

- ~~A.~~ 360
- B. 765
- C. 2,040
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- E. 18,360



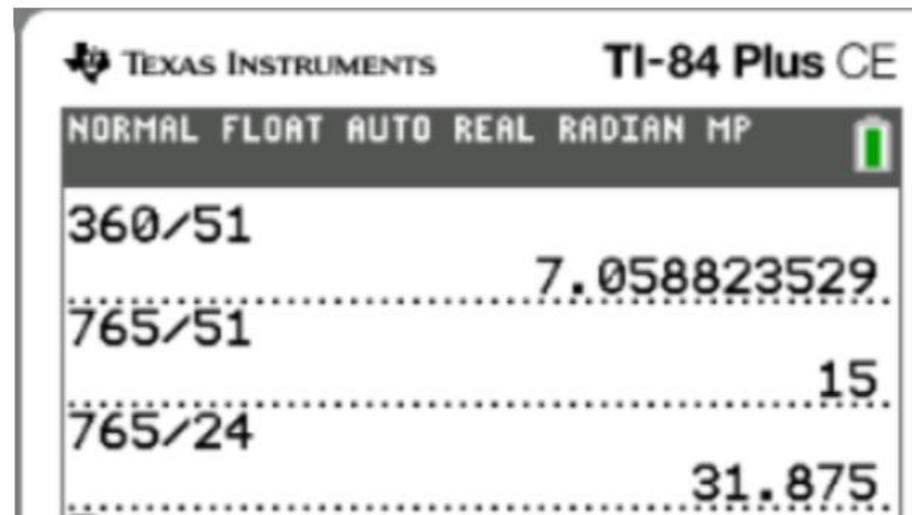
Let your calculator do the work (or work backwards)

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TI-84

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- E. 18,360



Let your calculator do the work (or work backwards)

8. What is the least common denominator of these fractions:

$$\frac{4}{15}, \frac{1}{24}, \text{ and } \frac{3}{51} ?$$

TI-84

- ~~A.~~ 360
- ~~B.~~ 765
- C.** 2,040
- D. 6,120
- E. 18,360

TEXAS INSTRUMENTS TI-84 Plus CE

NORMAL FLOAT AUTO REAL Radian MP

2040/15	
.....	136
2040/24	
.....	85
2040/51	
.....	40

Let your calculator do the work (Solving systems)

9. A movie theater surveyed 5,000 teens and young adults.

Age Groups	Number
13-14	2,750
15-16	1,225
17-18	625
Young adults	400

Moviegoer Category	Number
Very Often	830
Often	1,650
Sometimes	2,320
Rarely	200

Movie tickets are \$9.50 for all regular showings and \$7.00 for matinees. Suppose all the teens and young adults surveyed happened to attend 1 movie each in one particular month. The total amount spent on movie tickets by those surveyed in that month was \$38,500. How many teens and young adults attended matinees that month?

- F. 500
- G. 1,400
- H. 2,500
- J. 3,600
- K. 4,500

Let your calculator do the work (Solving systems)

9. A movie theater surveyed 5,000 teens and young adults.

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Let your calculator do the work

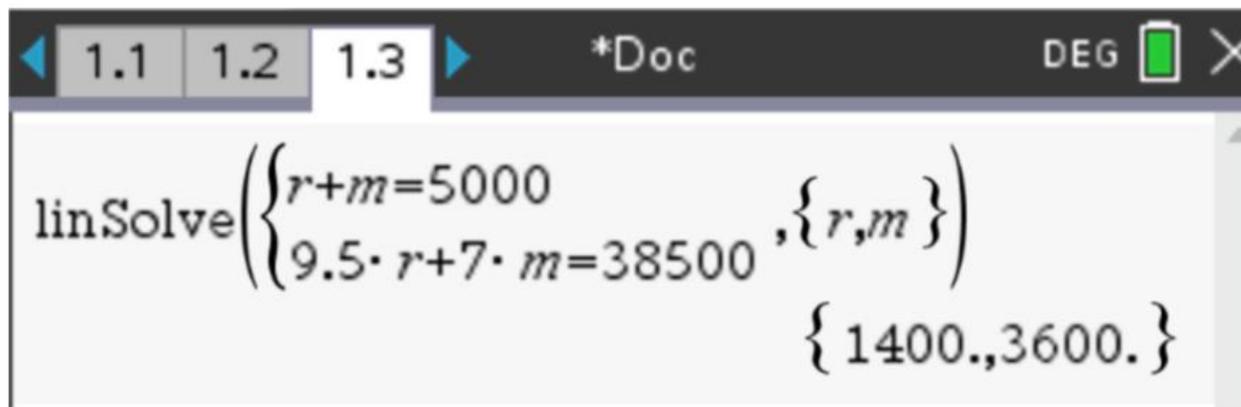
(Linear solve on TI-Nspire)

9. A movie theater surveyed 5,000 teens and young adults. Movie tickets are \$9.50 for all regular showings and \$7.00 for matinees. Suppose all the teens and young adults surveyed happened to attend 1 movie each in one particular month. The total amount spent on movie tickets by those surveyed in that month was \$38,500. How many teens and young adults attended matinees that month?

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TI-Nspire

Press  > Algebra > Solve System of Linear Equations



The image shows a TI-Nspire calculator screen. At the top, there are navigation buttons for pages 1.1, 1.2, and 1.3, with 1.3 selected. To the right, it says '*Doc', 'DEG', and a battery icon. The main display area shows the command $\text{linSolve}\left(\begin{cases} r+m=5000 \\ 9.5 \cdot r+7 \cdot m=38500 \end{cases}, \{r, m\}\right)$ and the result $\{1400., 3600.\}$.

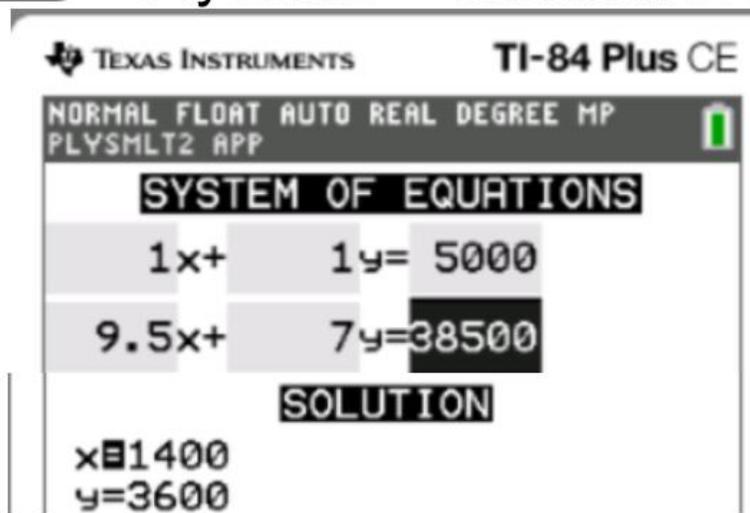
Let your calculator do the work (PLYSMLT2 APP on TI-84)

9. A movie theater surveyed 5,000 teens and young adults. Movie tickets are \$9.50 for all regular showings and \$7.00 for matinees. Suppose all the teens and young adults surveyed happened to attend 1 movie each in one particular month. The total amount spent on movie tickets by those surveyed in that month was \$38,500. How many teens and young adults attended matinees that month?

- F. 500
- G. 1,400
- H. 2,500
- J. 3,600
- K. 4,500

TI-84

Press **apps** > PlySmlt2 > Simultaneous Eqn Solver



Let your calculator do the work (Use the fraction template!)

10. What is the value of $(25^{(1/2)} + 16^{(1/4)})^2$?
- A. 6 B. 29 C. 49 D. 81 E. 1681

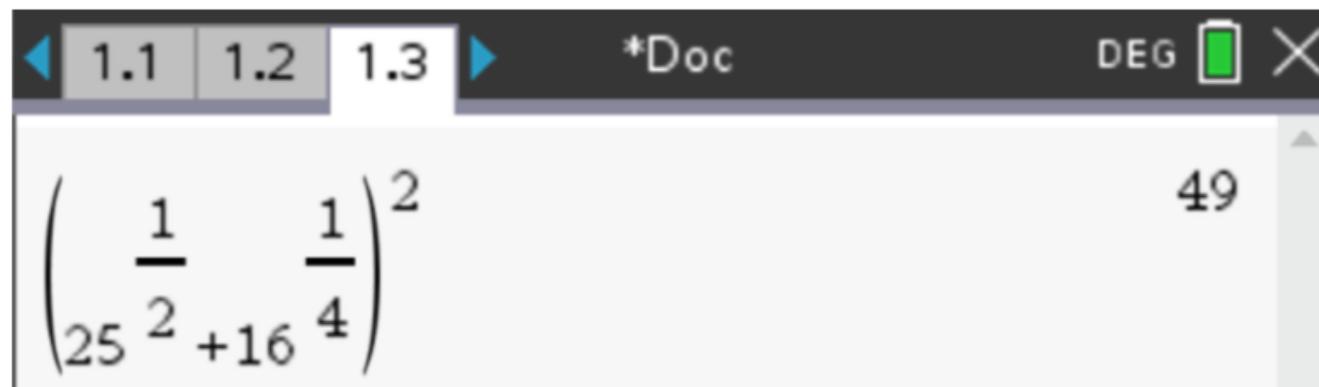
Let your Calculator do the work

(Use the fraction template!)

10. What is the value of $(25^{(1/2)} + 16^{(1/4)})^2$?
- A. 6 B. 29 C. 49 D. 81 E. 1681

TI-Nspire

Press ctrl ÷ for the fraction template



The image shows a TI-Nspire calculator screen. At the top, there are navigation arrows and tabs labeled 1.1, 1.2, and 1.3. To the right of the tabs is a document icon labeled *Doc, and further right are the DEG mode indicator and a battery icon. The main display area shows the expression $(25^{\frac{1}{2}} + 16^{\frac{1}{4}})^2$ on the left and the result 49 on the right.

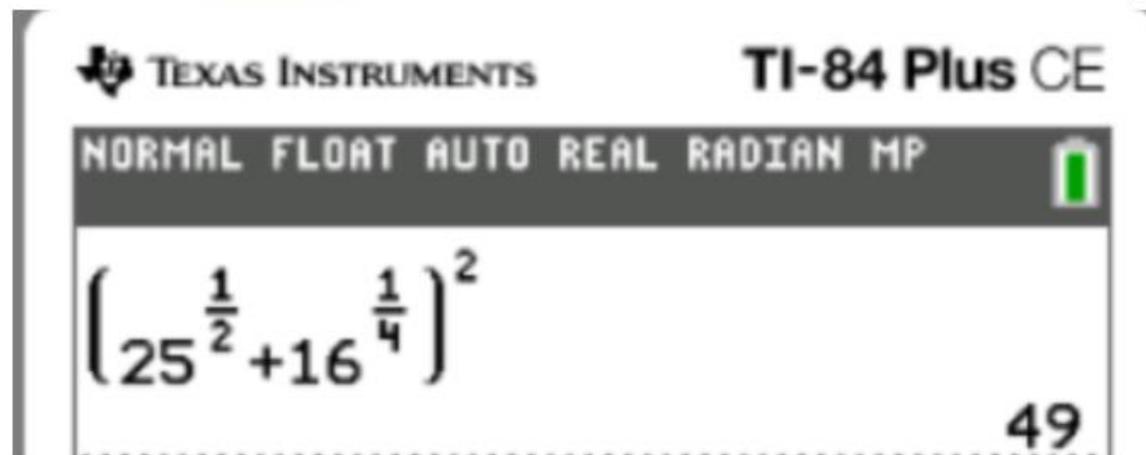
Let your calculator do the work

(Use the fraction template!)

10. What is the value of $\left(25^{(1/2)} + 16^{(1/4)}\right)^2$?
- A. 6 B. 29 C. 49 D. 81 E. 1681

TI-84

Press **alpha** **X,T,θ,n** for the fraction template



Let your calculator do the work

(Use copy & paste)

11. All the values in the equation below are exact. What value of c makes the equation true?

$$(3.25 \times 10^{-c+2})(5 \times 10^6) = 1625$$

F. -7

G. -6

H. 6

J. 7

K. 8

Let your calculator do the work

(Use copy & paste)

11. All the values in the equation below are exact. What value of c makes the equation true?

$$(3.25 \times 10^{-c+2})(5 \times 10^6) = 1625$$

F. -7

G. -6

H. 6

J. 7

K. 8

A calculator interface showing three calculations. The top bar has tabs for 1.1, 1.2, and 1.3, with 1.3 selected. The title bar says '*Doc' and 'DEG'. The calculations are as follows:

$3.25 \cdot 10^{-7+2} \cdot 5 \cdot 10^6$	$1.625E16$
$3.25 \cdot 10^{-6+2} \cdot 5 \cdot 10^6$	$1.625E15$
$3.25 \cdot 10^{-6+2} \cdot 5 \cdot 10^6$	$1625.$

Let your calculator do the work (Graph and find the vertex)

12. In the standard (x,y) coordinate plane, the graph of $y = 35 - 20(x + 10)^2$ is a parabola. What are the coordinates of the vertex of the parabola?

- A. $(10,15)$
- B. $(-10,15)$
- C. $(10,35)$
- D. $(-10,35)$
- E. $(-10,-20)$

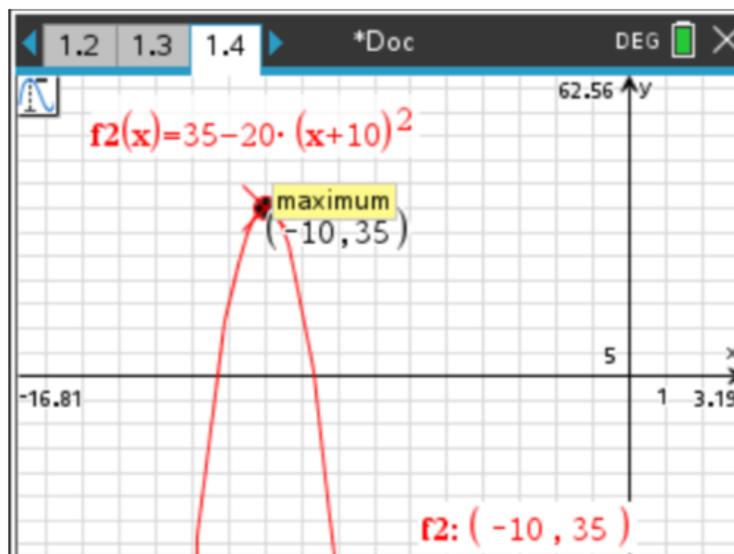
Let your calculator do the work (Use Graph Trace)

12. In the standard (x,y) coordinate plane, the graph of $y = 35 - 20(x + 10)^2$ is a parabola. What are the coordinates of the vertex of the parabola?

- A. $(10,15)$
- B. $(-10,15)$
- C. $(10,35)$
- D. $(-10,35)$
- E. $(-10,-20)$

TI-Nspire

Press **menu** > Trace > Graph Trace



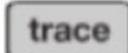
Let your calculator do the work

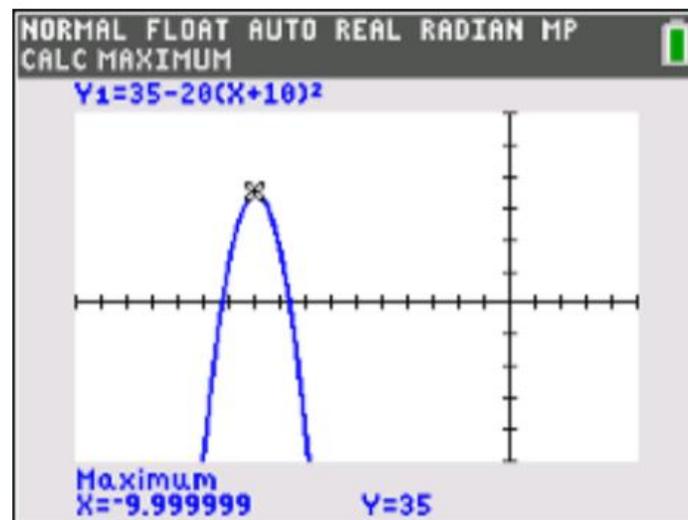
(Use the Calculate menu)

12. In the standard (x,y) coordinate plane, the graph of $y = 35 - 20(x + 10)^2$ is a parabola. What are the coordinates of the vertex of the parabola?

- A. $(10,15)$
- B. $(-10,15)$
- C. $(10,35)$
- D. $(-10,35)$
- E. $(-10,-20)$

TI-84

Press    > Maximum



Let your calculator do the work (Use the Solver)

13. The total amount of a substance present in a laboratory experiment is given by the formula: $A = A_0(3^{(h/7)})$ where A is the total amount of the substance h hours after an initial amount (A_0) of the substance began accumulating. Which expression gives the number of hours it will take an initial amount of 20 grams of this substance to accumulate to 100 grams?

F. 7

G. 35

H. $\log_3(70)$

J. $7\log_3(5)$

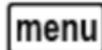
K. $7\log_{20}(100)$

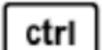
Let your calculator do the work (Use the Solver)

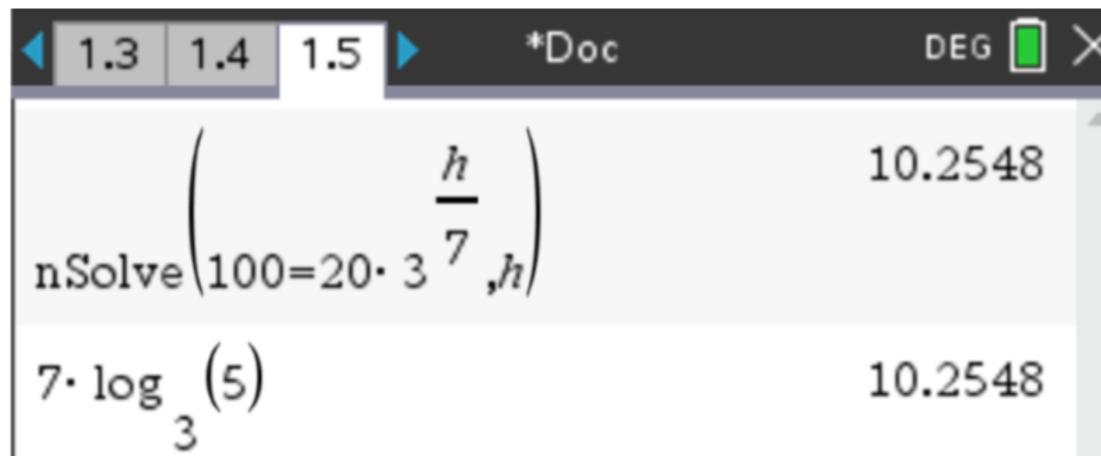
13. The total amount of a substance present in a laboratory experiment is given by the formula: $A = A_0(3^{(h/7)})$ where A is the total amount of the substance h hours after an initial amount (A_0) of the substance began accumulating. Which expression gives the number of hours it will take an initial amount of 20 grams of this substance to accumulate to 100 grams?

- F. 7
- G. 35
- H. $\log_3(70)$
- J. $7\log_3(5)$
- K. $7\log_{20}(100)$

TI-Nspire

Press  > Algebra > Numerical Solve

Press   to enter a logarithm



The calculator screen shows the following steps and results:

Expression	Result
$\text{nSolve}\left(100=20 \cdot 3^{\frac{h}{7}}, h\right)$	10.2548
$7 \cdot \log_3(5)$	10.2548

Let your calculator do the work

(Use the Solver)

13. The total amount of a substance present in a laboratory experiment is given by the formula: $A = A_0(3^{(h/7)})$ where A is the total amount of the substance h hours after an initial amount (A_0) of the substance began accumulating. Which expression gives the number of hours it will take an initial amount of 20 grams of this substance to accumulate to 100 grams?

F. 7

G. 35

H. $\log_3(70)$

J. $7\log_3(5)$

K. $7\log_{20}(100)$

TI-84

Press **math**  > Numeric Solver

Press **alpha** **window** **5** to enter a logarithm

EQUATION SOLVER

E1: 100

E2: $20 \times 3^{\frac{x}{7}}$

NORMAL FLOAT AUTO REAL RADIAN MP
SOLUTION IS MARKED *

$100 = 20 \times 3^{\frac{x}{7}}$

- $X = 10.254814645024$
- bound = { -1E99, 1E99 }
- E1 - E2 = 0

SOLVE

NORMAL FLOAT AUTO REAL RADIAN MP

$7\log_3(5)$

..... 10.25481465

Let your calculator do the work

14. If the positive integers x and y are relatively prime (their greatest common factor is 1) and

$$\frac{1}{5} \cdot \frac{1}{2} + \frac{1}{2} \div \frac{1}{5} = \frac{x}{y}$$

Then $x + y = ?$

- A. 5
- B. 8
- C. 13
- D. 18
- E. 65

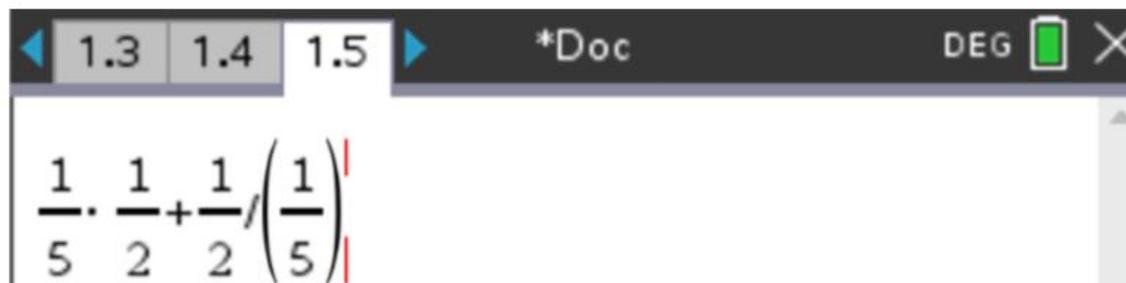
Let your calculator do the work

14. If the positive integers x and y are relatively prime (their greatest common factor is 1) and

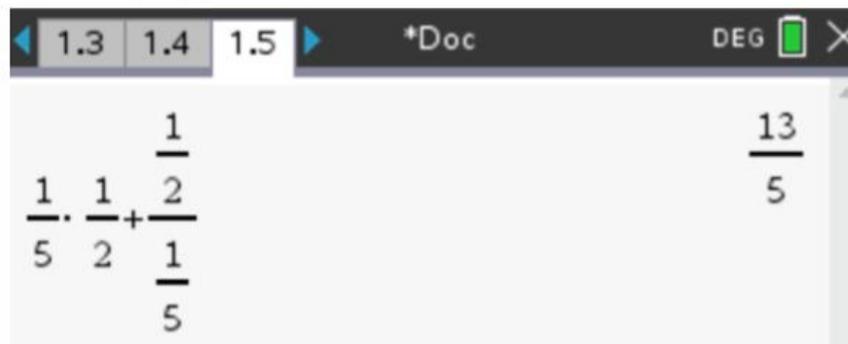
$$\frac{1}{5} \cdot \frac{1}{2} + \frac{1}{2} \div \frac{1}{5} = \frac{x}{y}$$

Then $x + y = ?$

- A. 5
- B. 8
- C. 13
- D. 18
- E. 65



A calculator screen showing the input expression $\frac{1}{5} \cdot \frac{1}{2} + \frac{1}{2} \div \left(\frac{1}{5}\right)$. The screen has a dark header with navigation arrows, a page number '1.5', and a battery icon. The expression is entered in a light-colored area with red vertical lines indicating the current cursor position.



A calculator screen showing the result of the calculation. The expression $\frac{1}{5} \cdot \frac{1}{2} + \frac{2}{1}$ is shown on the left, and the result $\frac{13}{5}$ is shown on the right. The screen has a dark header with navigation arrows, a page number '1.5', and a battery icon.

Let your calculator do the work

(Graphing a hyperbola)

15. A hyperbola has vertices $(-2,3)$ and $(-2,1)$ and that passes through the origin is shown below in the standard (x,y) coordinate plane. The hyperbola has which of the following equations?

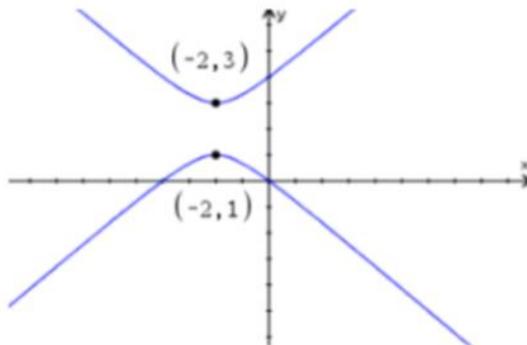
A. $\frac{(y-2)^2}{1} - \frac{4(x+2)^2}{3} = 1$

B. $\frac{(y-2)^2}{1} - \frac{3(x+2)^2}{4} = 1$

C. $\frac{(y+2)^2}{1} - \frac{4(x-2)^2}{3} = 1$

D. $\frac{(y-2)^2}{1} + \frac{4(x+2)^2}{3} = 1$

E. $\frac{(y-2)^2}{1} + \frac{3(x+2)^2}{4} = 1$



Let your calculator do the work

(Graphing a hyperbola)

15. A hyperbola has vertices $(-2,3)$ and $(-2,1)$ and that passes through the origin is shown below in the standard (x,y) coordinate plane. The hyperbola has which of the following equations?

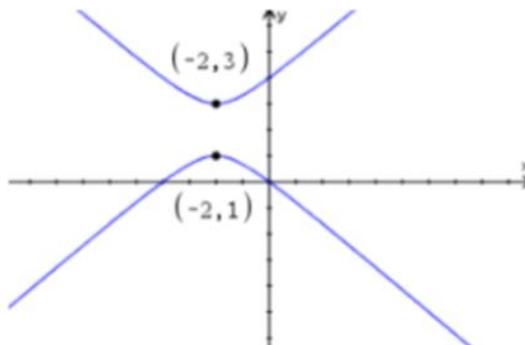
A. $\frac{(y-2)^2}{1} - \frac{4(x+2)^2}{3} = 1$

B. $\frac{(y-2)^2}{1} - \frac{3(x+2)^2}{4} = 1$

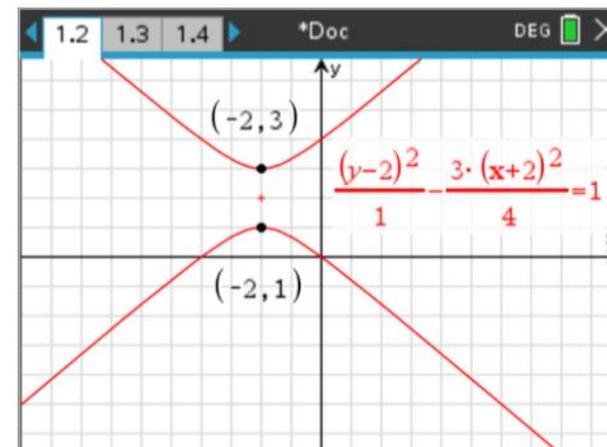
C. $\frac{(y+2)^2}{1} - \frac{4(x-2)^2}{3} = 1$

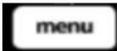
D. $\frac{(y-2)^2}{1} + \frac{4(x+2)^2}{3} = 1$

E. $\frac{(y-2)^2}{1} + \frac{3(x+2)^2}{4} = 1$



TI-Nspire



Press  > Graph Edit/Entry
> Relation

Let your calculator do the work

(Graphing a hyperbola)

15. A hyperbola has vertices $(-2,3)$ and $(-2,1)$ and that passes through the origin is shown below in the standard (x,y) coordinate plane. The hyperbola has which of the following equations?

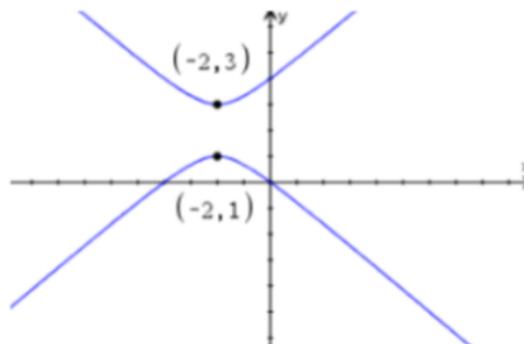
A. $\frac{(y-2)^2}{1} - \frac{4(x+2)^2}{3} = 1$

B. $\frac{(y-2)^2}{1} - \frac{3(x+2)^2}{4} = 1$

C. $\frac{(y+2)^2}{1} - \frac{4(x-2)^2}{3} = 1$

D. $\frac{(y-2)^2}{1} + \frac{4(x+2)^2}{3} = 1$

E. $\frac{(y-2)^2}{1} + \frac{3(x+2)^2}{4} = 1$



TI-84

Press **apps** > Conics

CONIC MODE: FUNC AUTO
CONIC GRAPHING APP

HYPERBOLA

1: $\frac{(X-H)^2}{A^2} - \frac{(Y-K)^2}{B^2} = 1$ ✖

2: $\frac{(Y-K)^2}{A^2} - \frac{(X-H)^2}{B^2} = 1$ ✖

[ESC]

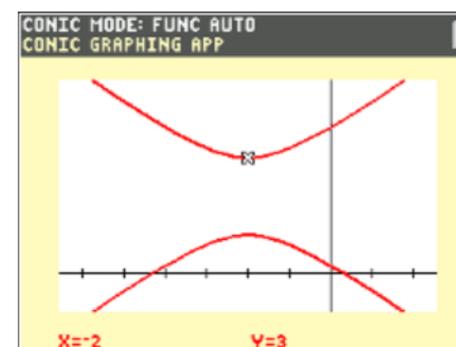
CONIC MODE: FUNC AUTO
PRESS ALPHA SOLVE or GRAPH

HYPERBOLA

$\frac{(Y-K)^2}{A^2} - \frac{(X-H)^2}{B^2} = 1$

A=1
B=1.33333333333333
H=-2
K=2

[ESC] [GRAPH]



Let your calculator do the work (Which answers can you eliminate?)

15. A hyperbola has vertices $(-2,3)$ and $(-2,1)$ and that passes through the origin is shown below in the standard (x,y) coordinate plane. The hyperbola has which of the following equations?

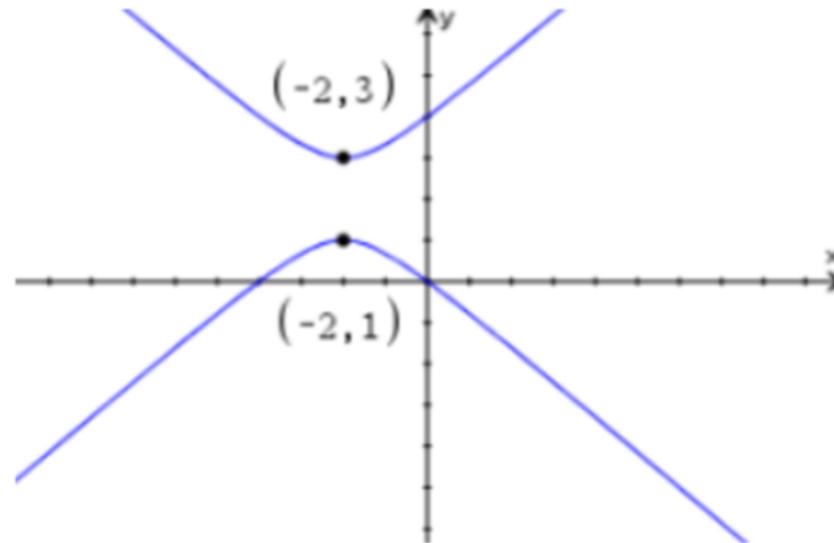
A. $\frac{(y-2)^2}{1} - \frac{4(x+2)^2}{3} = 1$

B. $\frac{(y-2)^2}{1} - \frac{3(x+2)^2}{4} = 1$

C. $\frac{(y+2)^2}{1} - \frac{4(x-2)^2}{3} = 1$

D. $\frac{(y-2)^2}{1} + \frac{4(x+2)^2}{3} = 1$

E. $\frac{(y-2)^2}{1} + \frac{3(x+2)^2}{4} = 1$



Let your calculator do the work (Which answers can you eliminate?)

15. A hyperbola has vertices $(-2,3)$ and $(-2,1)$ and that passes through the origin is shown below in the standard (x,y) coordinate plane. The hyperbola has which of the following equations?

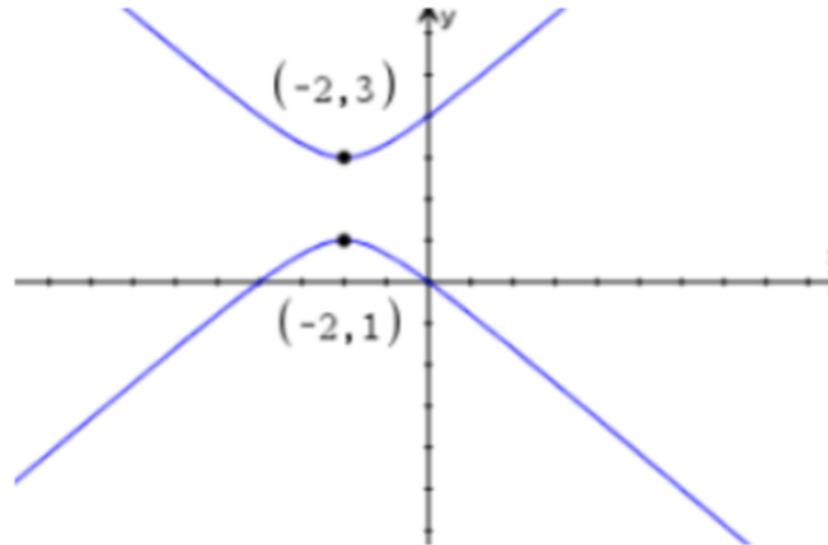
A. $\frac{(y-2)^2}{1} - \frac{4(x+2)^2}{3} = 1$

B. $\frac{(y-2)^2}{1} - \frac{3(x+2)^2}{4} = 1$

~~C.~~ $\frac{(y+2)^2}{1} - \frac{4(x-2)^2}{3} = 1$

~~D.~~ $\frac{(y-2)^2}{1} + \frac{4(x+2)^2}{3} = 1$

~~E.~~ $\frac{(y-2)^2}{1} + \frac{3(x+2)^2}{4} = 1$



Let your calculator do the work

(Can you eliminate any answers?)

16. The digit in the ones place of 3^{78} is 9. What digit is in the ones place of 3^{68} ?

- A. 0
- B. 1
- C. 3
- D. 7
- E. 9

HISTORY 	
3	3
3^2	9
3^3	27
3^4	81
3^5	

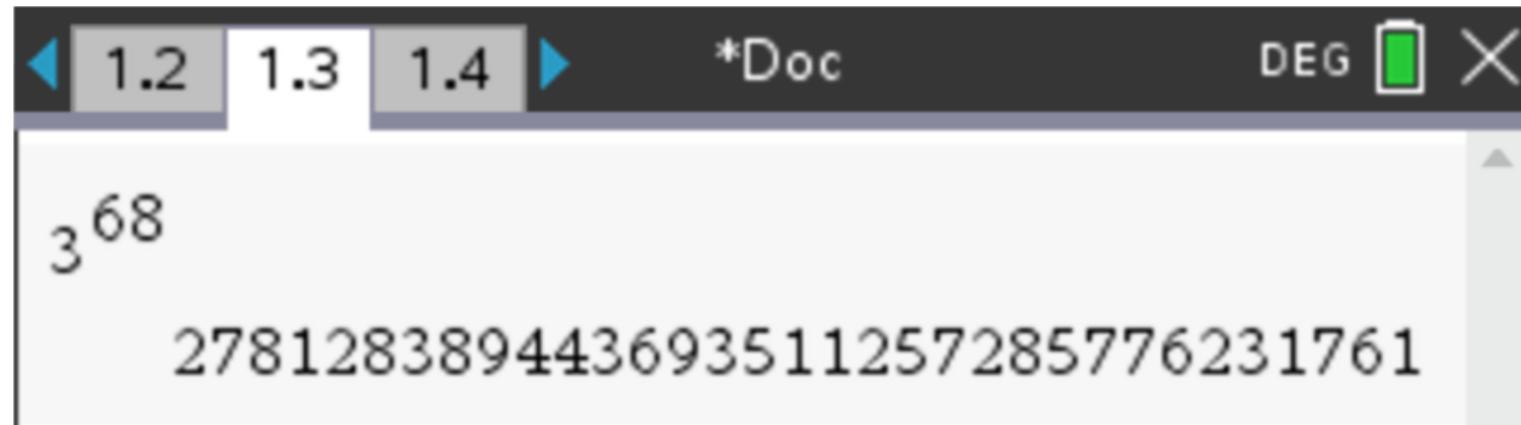
Let your calculator do the work

π

16. The digit in the ones place of 3^{78} is 9. What digit is in the ones place of 3^{68} ?

- A. 0
- B. 1
- C. 3
- D. 7
- E. 9

TI-Nspire



Let your calculator do the work

(Enter a complex number)

17. Remember, $i^2 = -1$. What complex number x is a solution to the equation $x(3 + 2i) = 1$?

F. $\frac{3}{13} + \frac{2}{13}i$

G. 1

C. $\frac{3}{13} - \frac{2}{13}i$

D. $-\frac{2i}{3}$

E. $\frac{1}{3} + 2i$

Let your calculator do the work

(Enter a complex number)

17. Remember, $i^2 = -1$. What complex number x is a solution to the equation $x(3 + 2i) = 1$?

F. $\frac{3}{13} + \frac{2}{13}i$

G. 1

C. $\frac{3}{13} - \frac{2}{13}i$

D. $-\frac{2i}{3}$

E. $\frac{1}{3} + 2i$

TI-Nspire

Press  and choose i



Let your calculator do the work

(Enter a complex number)

17. Remember, $i^2 = -1$. What complex number x is a solution to the equation $x(3 + 2i) = 1$?

F. $\frac{3}{13} + \frac{2}{13}i$

G. 1

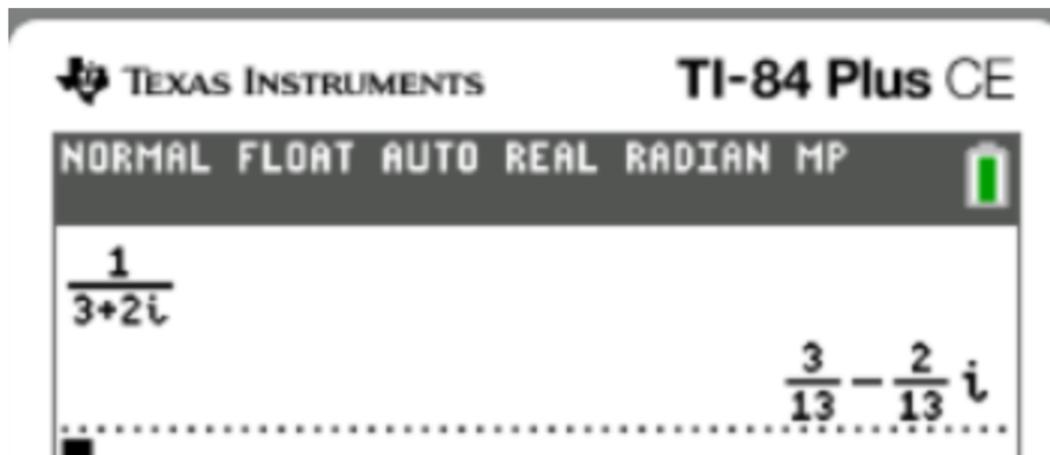
C. $\frac{3}{13} - \frac{2}{13}i$

D. $-\frac{2i}{3}$

E. $\frac{1}{3} + 2i$

TI-84

Press **2nd** to enter i



Factor, when possible

(Can be a shortcut)

18. What value of x satisfies the equation $\frac{2x^2-6x}{x-3} = 2$?

F. 4

G. 3

H. 2

J. 1

K. -1

Factor, when possible

(Can be a shortcut)

18. What value of x satisfies the equation $\frac{2x^2-6x}{x-3} = 2$?

F. 4

G. 3

H. 2

J. 1

K. -1

$$\frac{2x(\cancel{x-3})}{(\cancel{x-3})} = 2$$

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

$$x = 1$$

Factor, when possible

(Watch out for extraneous solutions!)

18. What value of x satisfies the equation $\frac{2x^2-6x}{x-3} = 2$?

F. 4

G. 3

H. 2

J. 1

K. -1

?

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

$$2x^2 - 6x = 2x - 6$$

$$2x^2 - 8x + 6 = 0$$

$$2(x^2 - 4x + 3) = 0$$

$$2(x - 3)(x - 1) = 0$$

$$x = 3$$

$$x = 1$$

Factor, when possible

(Or work backwards)

18. What value of x satisfies the equation $\frac{2x^2-6x}{x-3} = 2$?

F. 4

G. 3

H. 2

J. 1

K. -1

Factor, when possible

(Or work backwards)

18. What value of x satisfies the equation $\frac{2x^2-6x}{x-3} = 2$?

F. 4

G. 3

H. 2

J. 1

K. -1

$$\frac{2(1)^2 - 6(1)}{(1) - 3} = 2$$

$$\frac{2-6}{-2} = 2$$

$$\frac{-4}{-2} = 2 \quad \checkmark$$

Factor, when possible

(Can be a shortcut)

19. For all values of x greater than 2, which of the following expressions is equivalent to $\frac{x^2-x-6}{x^2-4}$?

A. $\frac{-x-6}{-4}$

D. $\frac{x+3}{x-2}$

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

E. $\frac{x+6}{x+2}$

C. $\frac{x-3}{x+2}$

Factor, when possible

(Can be a shortcut)

19. For all values of x greater than 2, which of the following expressions is equivalent to $\frac{x^2-x-6}{x^2-4}$?

A. $\frac{-x-6}{-4}$

D. $\frac{x+3}{x-2}$

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

E. $\frac{x+6}{x+2}$

C. $\frac{x-3}{x+2}$

$$\frac{(x-3)(\cancel{x+2})}{(x-2)(\cancel{x+2})}$$

Factor, when possible (Substitute numbers)

19. For all values of x greater than 2, which of the following expressions is equivalent to $\frac{x^2-x-6}{x^2-4}$?

~~A.~~ $\frac{-x-6}{-4}$

~~D.~~ $\frac{x+3}{x-2}$

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

~~E.~~ $\frac{x+6}{x+2}$

C. $\frac{x-3}{x+2}$

NORMAL FLOAT AUTO REAL Radian MP

3→X

..... 3

$\frac{x^2-x-6}{x^2-4}$

..... 0

Factor, when possible (Substitute numbers)

19. For all values of x greater than 2, which of the following expressions is equivalent to $\frac{x^2-x-6}{x^2-4}$?

~~A.~~ $\frac{-x-6}{-4}$

~~D.~~ $\frac{x+3}{x-2}$

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

~~E.~~ $\frac{x+6}{x+2}$

C. $\frac{x-3}{x+2}$

HISTORY	
$4 \rightarrow X$	
$\frac{x^2-x-6}{x^2-4}$	4
$\frac{x-3}{x-2}$	$\frac{1}{2}$
	$\frac{1}{2}$

Skip the question when you see “?” (Saves TIME!)

20. In the figure, $\angle CAB$ measures 28° , $\angle ABC$ measures 96° and points B, C and D are collinear. What is the measure of $\angle ACD$?

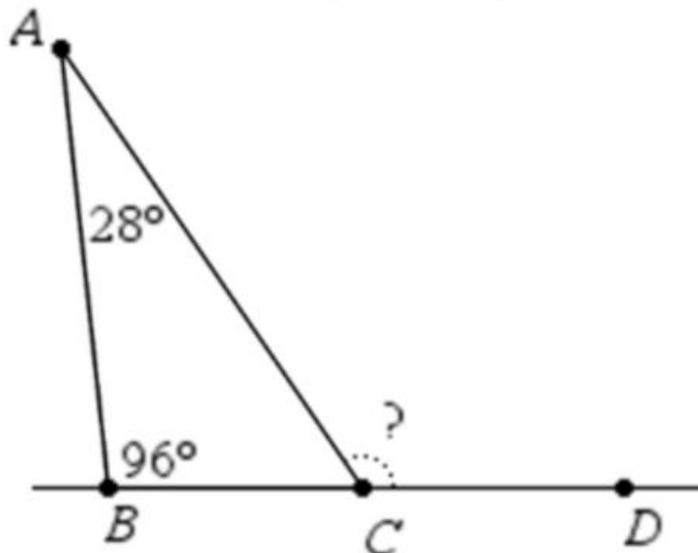
F. 56°

G. 114°

H. 116°

J. 124°

K. 156°



Figures are usually drawn to scale (About 90% of the time)

20. In the figure, $\angle CAB$ measures 28° , $\angle ABC$ measures 96° and points B, C and D are collinear. What is the measure of $\angle ACD$?

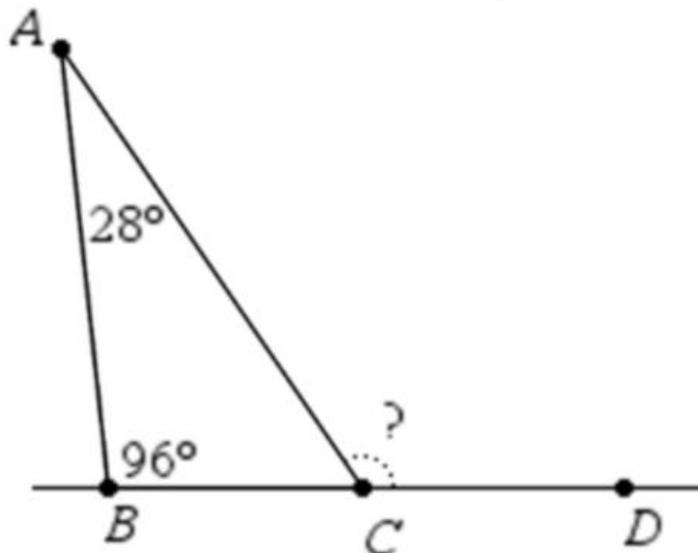
F. 56°

G. 114°

H. 116°

J. 124°

K. 156°



Figures are usually drawn to scale (Draw a 90 degree angle to estimate)

20. In the figure, $\angle CAB$ measures 28° , $\angle ABC$ measures 96° and points B, C and D are collinear. What is the measure of $\angle ACD$?

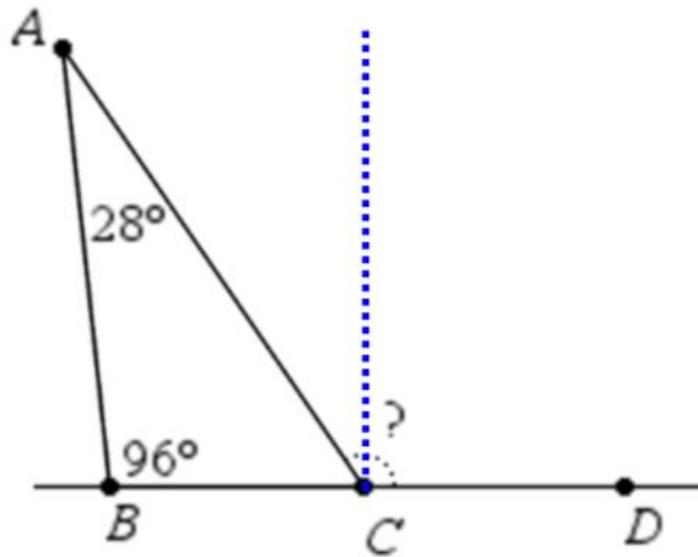
F. 56°

G. 114°

H. 116°

J. 124°

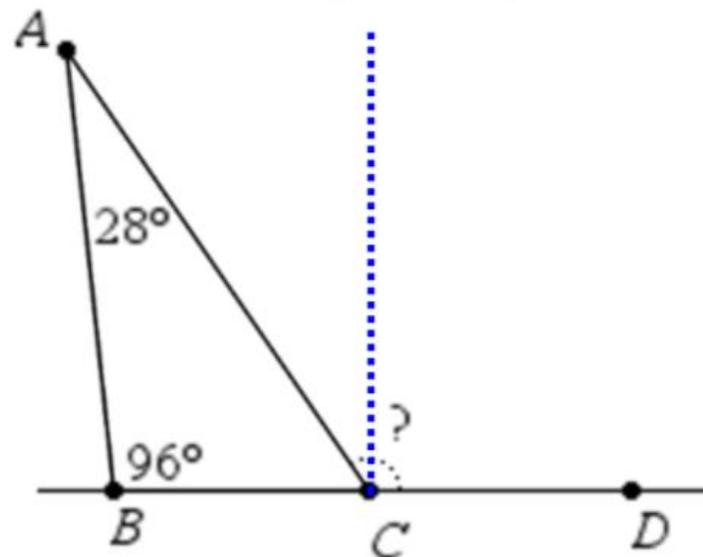
K. 156°



Figures are usually drawn to scale (Eliminate, then guess)

20. In the figure, $\angle CAB$ measures 28° , $\angle ABC$ measures 96° and points B, C and D are collinear. What is the measure of $\angle ACD$?

- F. 56°
- G. 114°
- H. 116°
- J. 124°
- K. 156°



Skip the question when you see “?” (Saves TIME!)

21. In the figure, E is on \overline{CA} , and the measures of $\angle BED$ and $\angle AEB$ are 90° and 125° respectively.

What is the measure of $\angle CED$?

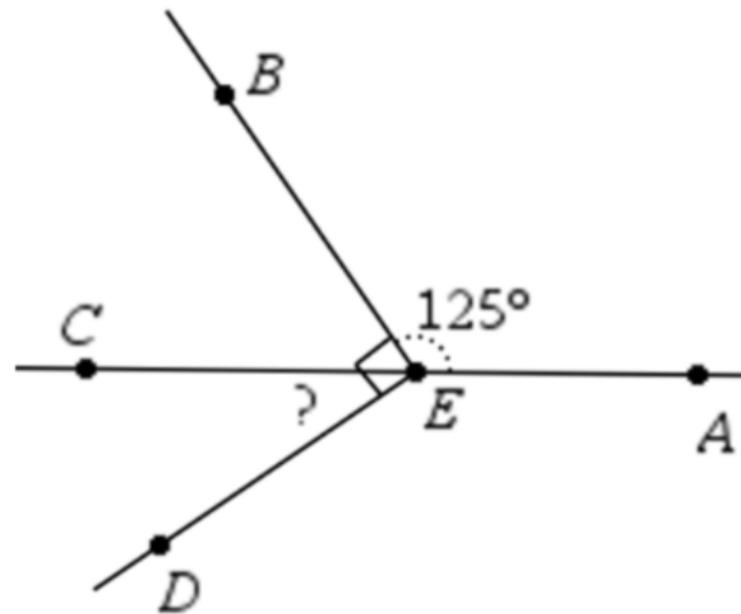
F. 25°

G. 35°

H. 45°

J. 55°

K. 65°



Figures are usually drawn to scale (Estimate, eliminate, then guess!)

21. In the figure, E is on \overline{CA} , and the measures of $\angle BED$ and $\angle AEB$ are 90° and 125° respectively.

What is the measure of $\angle CED$?

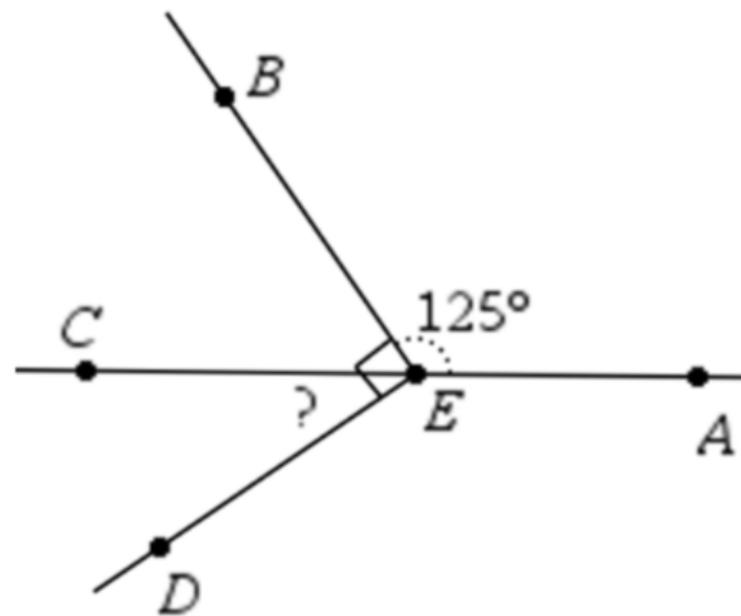
F. 25°

G. 35°

H. 45°

J. 55°

K. 65°



Figures are usually drawn to scale (Estimate, eliminate, then guess!)

21. In the figure, E is on \overline{CA} , and the measures of $\angle BED$ and $\angle AEB$ are 90° and 125° respectively.

What is the measure of $\angle CED$?

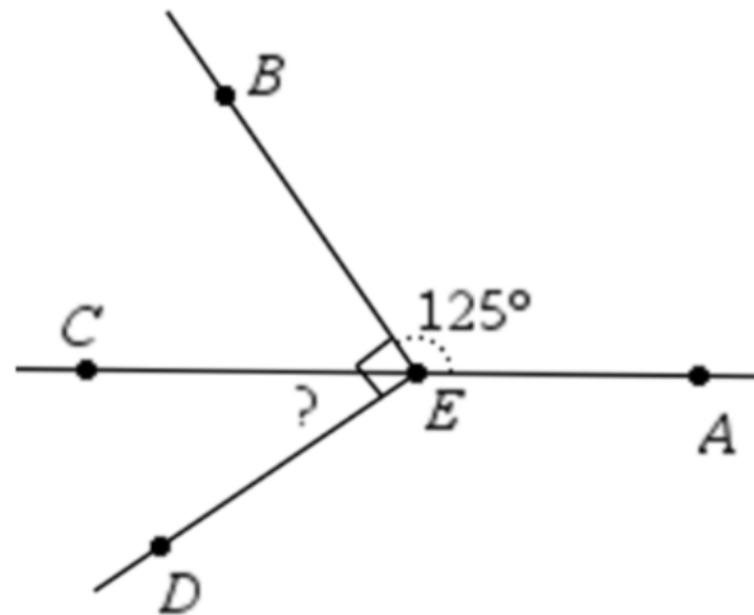
F. 25°

G. 35°

H. 45°

J. 55°

K. 65°



Skip the question when you see “?” (Saves TIME!)

22. Angela walked her dog 30 feet due east from the entrance to a tree and then walked 100 feet in a straight line 45° north of east to the exit. What is the distance, in *feet*, between the entrance and the exit?

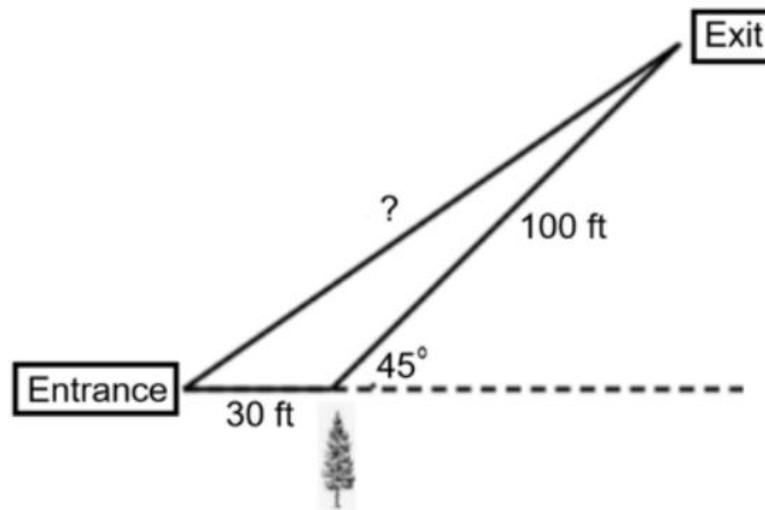
A. $\frac{130}{\cos(45)}$

B. $100 + \frac{30}{\cos(45)}$

C. $\frac{30}{\sin(135)} + 100$

D. $\sqrt{100^2 + 30^2 - 2(100)(30) \cdot \cos(45^\circ)}$

E. $\sqrt{100^2 + 30^2 - 2(100)(30) \cdot \cos(135^\circ)}$



Skip the question when you see “?”

(Evaluate answers in calculator)

22. Angela walked her dog 30 feet due east from the entrance to a tree and then walked 100 feet in a straight line 45° north of east to the exit. What is the distance, in *feet*, between the entrance and the exit?

- A. $\frac{130}{\cos(45)}$
- B. $100 + \frac{30}{\cos(45)}$
- C. $\frac{30}{\sin(135)} + 100$
- D. $\sqrt{100^2 + 30^2 - 2(100)(30) \cdot \cos(45^\circ)}$
- E. $\sqrt{100^2 + 30^2 - 2(100)(30) \cdot \cos(135^\circ)}$

HISTORY 

$\frac{130.}{\cos(45)}$
..... 183.8477631

$100 + \frac{30}{\cos(45)}$
..... 142.4264069

$\frac{30}{\sin(135)} + 100$
..... 142.4264069

$\sqrt{100^2 + 30^2 - 2(100)(30) * \cos(45)}$
..... 81.59264252

$\sqrt{100^2 + 30^2 - 2(100)(30) * \cos(135)}$
..... 123.0554375

Figures are usually drawn to scale (Estimate, eliminate, then guess!)

22. Angela walked her dog 30 feet due east from the entrance to a tree and then walked 100 feet in a straight line 45° north of east to the exit. What is the distance, in feet, between the entrance and the exit?

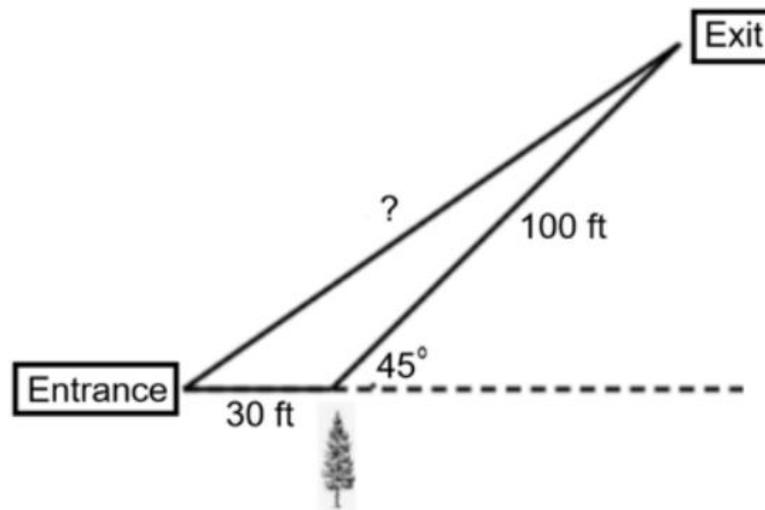
A. $\frac{130}{\cos(45)} = 183.85$

B. $100 + \frac{30}{\cos(45)} = 142.42$

C. $\frac{30}{\sin(135)} + 100 = 142.42$

D. $\sqrt{100^2 + 30^2 - 2(100)(30) \cdot \cos(45^\circ)} = 81.59$

E. $\sqrt{100^2 + 30^2 - 2(100)(30) \cdot \cos(135^\circ)} = 123.05$



Watch out for “stinkers” or tricky ones (If you are stuck, eliminate bad answers!)

23. A 500-square-mile national park has a number of protected large animals.

Large Animal	Number
Elephant	600
Rhinoceros	100
Lion	200
Leopard	300
Zebra	400
Giraffe	800
TOTAL	2,400

In this park, the average daily number of water consumed by each Leopard, Zebra, and Giraffe is 5, 8 and 10 respectively. Which matrix product gives the average total number of gallons of water consumed per day by all the Leopards, Zebras, and Giraffes in the park?

A. $[300 \ 800 \ 400] \cdot \begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix}$ D. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot [300 \ 800 \ 400]$

B. $[300 \ 400 \ 800] \cdot \begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix}$ E. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot \begin{bmatrix} 300 \\ 400 \\ 800 \end{bmatrix}$

C. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot [300 \ 400 \ 800]$

Watch out for “stinkers” or tricky ones

(Look at the order of the information)

23. A 500-square-mile national park has a number of protected large animals.

Large Animal	Number
Elephant	600
Rhinoceros	100
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Leopard	300
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TOTAL	2,400

leopard >> 300 >> 5

Zebra >> 400 >> 8

Giraffe >> 800 >> 10

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A. $[300 \quad 800 \quad 400] \cdot \begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix}$

D. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot [300 \quad 800 \quad 400]$

B. $[300 \quad 400 \quad 800] \cdot \begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix}$

E. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot \begin{bmatrix} 300 \\ 400 \\ 800 \end{bmatrix}$

C. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot [300 \quad 400 \quad 800]$

Watch out for “stinkers” or tricky ones

(Can you multiply the matrices?)

23. A 500-square-mile national park has a number of protected large animals.

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A. $[300 \ 800 \ 400] \cdot \begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix}$

D. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot [300 \ 800 \ 400]$

B. $[300 \ 400 \ 800] \cdot \begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix}$

E. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot \begin{bmatrix} 300 \\ 400 \\ 800 \end{bmatrix}$ $(3 \times 1) \cdot (3 \times 1) = \text{Impossible!}$

C. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot [300 \ 400 \ 800]$
 $(3 \times 1) \cdot (1 \times 3) = [3 \times 3]$

Watch out for “stinkers” or tricky ones

(Multiply the matrices in calculator!)

23. A 500-square-mile national park has a number of protected large animals.

Large Animal	Number
Elephant	600
Rhinoceros	100
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A. $[300 \ 800 \ 400] \cdot \begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix}$

D. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot [300 \ 800 \ 400]$

B. $[300 \ 400 \ 800] \cdot \begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix}$

E. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot \begin{bmatrix} 300 \\ 400 \\ 800 \end{bmatrix}$

C. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot [300 \ 400 \ 800]$
 $(3 \times 1) \cdot (1 \times 3) = [3 \times 3]$

TI-84

Press **alpha** **zoom** to enter a Matrix

HISTORY

$$[300 \ 400 \ 800] * \begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix}$$

[12700]

$$\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} * [300 \ 400 \ 800]$$

$$\begin{bmatrix} 1500 & 2000 & 4000 \\ 2400 & 3200 & 6400 \\ 3000 & 4000 & 8000 \end{bmatrix}$$

Watch out for “stinkers” or tricky ones

(Multiply the matrices in calculator!)

23. A 500-square-mile national park has a number of protected large animals.

Large Animal	Number
Elephant	600
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Lion	200
Leopard	300
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Giraffe	800
TOTAL	2,400

In this park, the average daily number of water consumed is 5, 8 and 10 respectively. Which matrix product gives the water consumed per day by all the Leopards, Zebras, and

A. $[300 \ 800 \ 400] \cdot \begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix}$

D. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot [300 \ 800]$

B. $[300 \ 400 \ 800] \cdot \begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix}$

E. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot \begin{bmatrix} 300 \\ 400 \\ 800 \end{bmatrix}$

C. $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot [300 \ 400 \ 800]$
 $(3 \times 1) \cdot (1 \times 3) = [3 \times 3]$

TI-Nspire

Press $\boxed{\text{menu}}$ > Matrix & Vector
> Create > Matrix

The screenshot shows a TI-Nspire calculator interface. At the top, there are page numbers 1.2, 1.3, and 1.4, and a document icon labeled '*Doc'. The main display area shows the calculation of a matrix product: $[300 \ 400 \ 800] \cdot \begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix}$. The result is displayed as $[12700]$. Below this, another calculation is shown: $\begin{bmatrix} 5 \\ 8 \\ 10 \end{bmatrix} \cdot [300 \ 400 \ 800]$, which results in a 3×3 matrix: $\begin{bmatrix} 1500 & 2000 & 4000 \\ 2400 & 3200 & 6400 \\ 3000 & 4000 & 8000 \end{bmatrix}$.

Watch out for “stinkers” or tricky ones (Pay attention to words that are *italicized*!)

24. A rectangular porch is 24 feet long and 15 feet wide. What is the area, in square *yards*, of the porch?

- A. 30
- B. 40
- C. 120
- D. 240
- E. 360

Watch out for “stinkers” or tricky ones (Convert first!)

24. A rectangular porch is 24 feet long and 15 feet wide. What is the area, in square *yards*, of the porch?

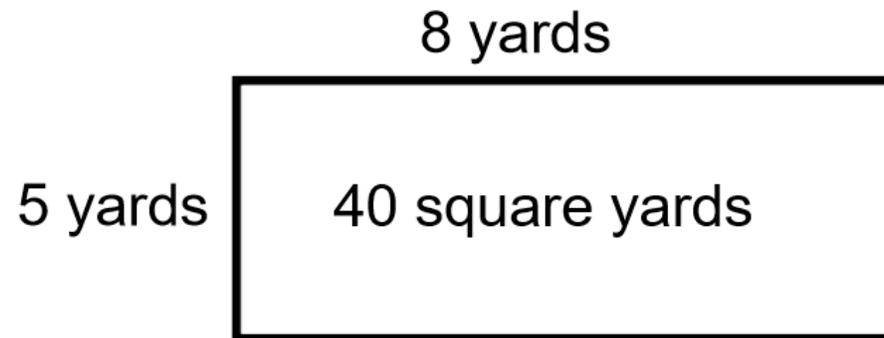
A. 30

B. 40

C. 120

D. 240

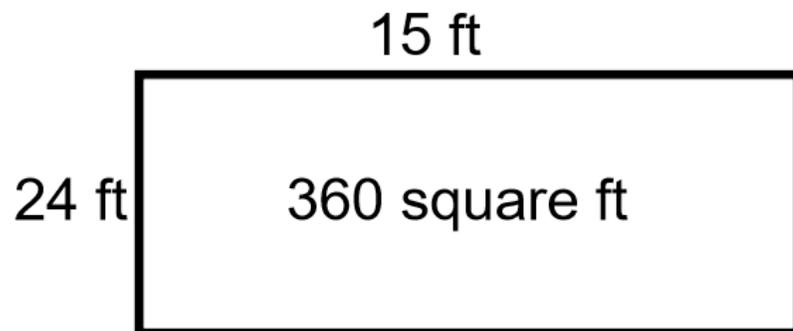
E. 360



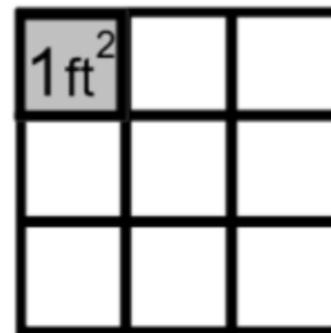
Watch out for “stinkers” or tricky ones (or after....but be careful!)

24. A rectangular porch is 24 feet long and 15 feet wide. What is the area, in square *yards*, of the porch?

- A. 30
- B. 40
- C. 120
- D. 240
- E. 360



$$360/9=40$$



9 square ft in 1 square yard!

Draw the figure

(A simple drawing can tell you a lot)

25. Mason and Terry are best friends. They always sit at the circular lunch table with the same group of 7 people. If each person sits in a random spot around the table, what is the probability that Mason and Terry will NOT sit next to each other?

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

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

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

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

E. $\frac{5}{6}$

Draw the figure

(A simple drawing can tell you a lot)

25. Mason and Terry are best friends. They always sit at the circular lunch table with the same group of 7 people. If each person sits in a random spot around the table, what is the probability that Mason and Terry will NOT sit next to each other?

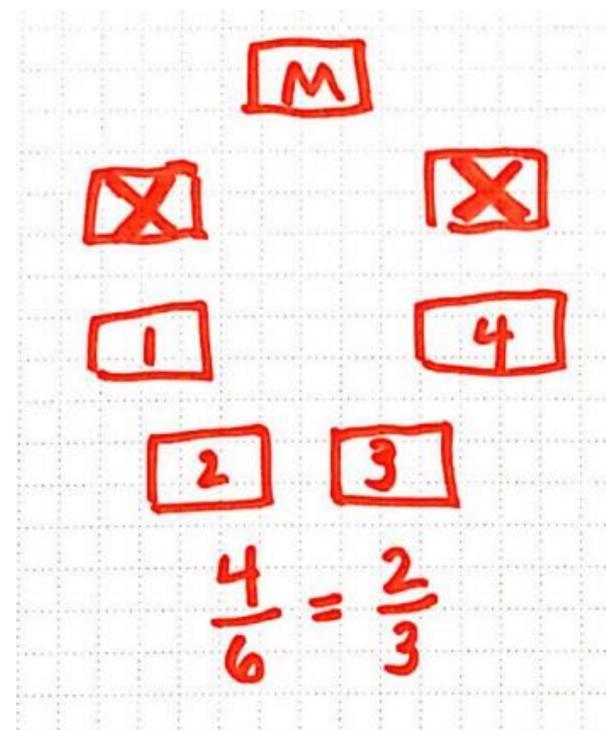
A. $\frac{1}{6}$

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

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

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

E. $\frac{5}{6}$



Draw the figure

(Is there a way to use combinations?)

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- A. $\frac{1}{6}$
- B. $\frac{1}{3}$
- C. $\frac{1}{2}$
- D. $\frac{2}{3}$
- E. $\frac{5}{6}$

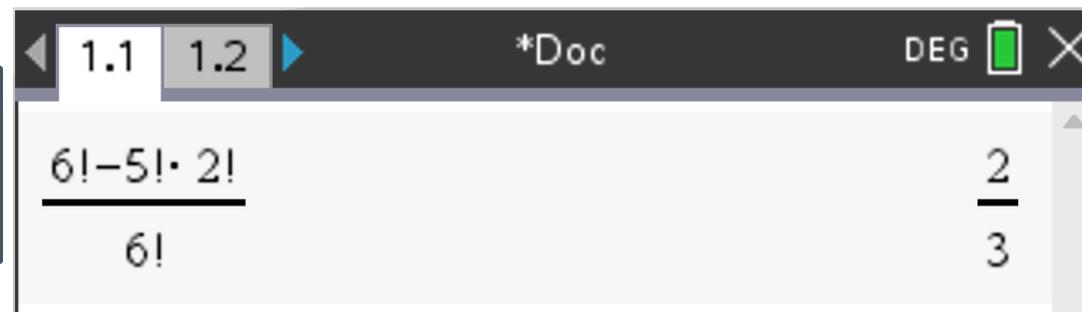
Draw the figure

(Is there a way to use combinations?)

25. Mason and Terry are best friends. They always sit at the circular lunch table with the same group of 7 people. If each person sits in a random spot around the table, what is the probability that Mason and Terry will NOT sit next to each other?

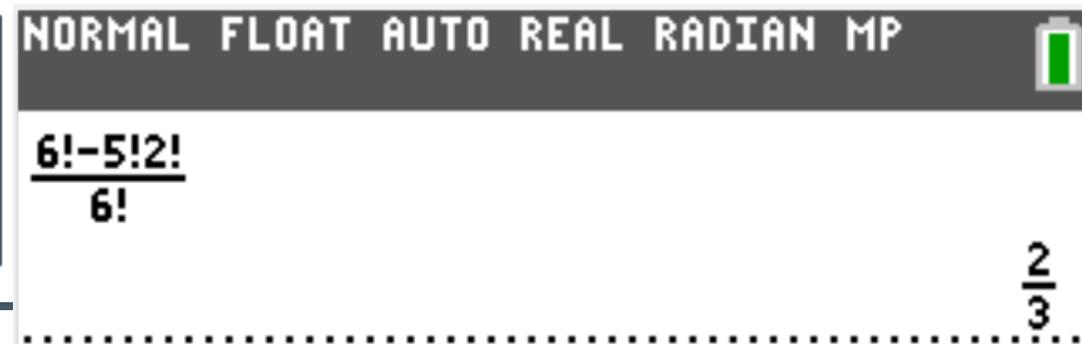
- A. $\frac{1}{6}$
- B. $\frac{1}{3}$
- C. $\frac{1}{2}$
- D. $\frac{2}{3}$
- E. $\frac{5}{6}$

For factorial on TI-Nspire, select , then option 5 Probability, and option 1.



$$\frac{6! - 5! \cdot 2!}{6!} = \frac{2}{3}$$

On TI-84, factorial is in the PROB menu under the  menu. (Try  twice vs.  three times.)



NORMAL FLOAT AUTO REAL Radian MP

$$\frac{6! - 5! \cdot 2!}{6!} = \frac{2}{3}$$

Thank you!



- › Recordings of today's sessions will be available soon.