Question ID bb93e1bd

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: bb93e1bd

$$y = -\frac{1}{9}x$$
$$y = \frac{1}{2}x$$

The solution to the given system of equations is (x, y). What is the value of x?

A. -9

B. -7

C. 0

D. 2

Question ID 249313d5

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 249313d5

A wire with a length of 106 inches is cut into two parts. One part has a length of x inches, and the other part has a length of y inches. The value of x is 6 more than 4 times the value of y. What is the value of x?

A. 25

B. 28

C. 56

D. 86

Question ID db8430a3

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: db8430a3

$$2a + 8b = 198$$
$$2a + 4b = 98$$

The solution to the given system of equations is (a, b). What is the value of b?

Question ID 4820d38d

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 4820d38d

$$y = 3x + 9$$
$$3y = 8x - 6$$

The solution to the given system of equations is (x, y). What is the value of $x - y$?

A. -123

B. -33

C. 3

D. 57

Question ID 804081ee

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 804081ee

$$6 + 7r = pw$$
$$7r - 5w = 5w + 11$$

In the given system of equations, p is a constant. If the system has no solution, what is the value of p?

Question ID 8dde9438

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 8dde9438

$$y = 4x + 1$$
$$4y = 15x - 8$$

The solution to the given system of equations is (x, y). What is the value of $x - y$?

Question ID f564e206

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: f564e206

$$6x + 7y = 28$$
$$2x + 2y = 10$$

The solution to the given system of equations is (x, y). What is the value of *y*?

A. -2

B. 7

C. 14

D. 18

Question ID a3572e9d

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: a3572e9d

$$-x - wy = -337$$
$$2x - wy = 47$$

In the given system of equations, w is a constant. In the *xy*-plane, the graphs of these equations intersect at the point $(q, 19)$, where q is a constant. What is the value of w?

Question ID 01c33da0

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 01c33da0

$$ax + by = 72$$
$$6x + 2by = 56$$

In the given system of equations, a and b are constants. The graphs of these equations in the *xy*-plane intersect at the point $(4, y)$. What is the value of a?

A. 3

B. 4

C. 6

D. 14

Question ID 40bfb4d6

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 40bfb4d6

$$\frac{2}{5}x + \frac{7}{5}y = \frac{2}{7}$$
$$gx + ky = \frac{5}{2}$$

In the given system of equations, g and k are constants. The system has infinitely many solutions. What is the value of $\frac{g}{k}$?

Question ID 9f6d8dbb

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 9f6d8dbb

$$2x + 3y = 7$$
$$10x + 15y = 35$$

For each real number r, which of the following points lies on the graph of each equation in the *xy*-plane for the given system?

A. $(\frac{r}{5} + 7, -\frac{r}{5} + 35)$

B. $(-\frac{3r}{2} + \frac{7}{2}, r)$

C. $(r, \frac{2r}{3} + \frac{7}{3})$

D. $(r, -\frac{3r}{2} + \frac{7}{2})$

Question ID 852dcde1

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 852dcde1

$$48x - 64y = 48y + 24$$
$$ry = \frac{1}{8} - 12x$$

In the given system of equations, r is a constant. If the system has no solution, what is the value of r?

Question ID 4a31a156

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 4a31a156

$$3x + 6 = 4y$$
$$3x + 4 = 2y$$

The solution to the given system of equations is (x, y). What is the value of y?

Question ID d23ede16

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: d23ede16

$$2(8x) + 4(7y) = 12$$
$$-2(8x) + 4(7y) = 12$$

The solution to the given system of equations is (x, y). What is the value of $8x + 7y$?

Question ID dca95bc2

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: dca95bc2

$$8x + 7y = 9$$
$$24x + 21y = 27$$

For each real number r, which of the following points lies on the graph of each equation in the *xy*-plane for the given system?

A. $(r, -\frac{8r}{7} + \frac{9}{7})$

B. $(-\frac{8r}{7} + \frac{9}{7}, r)$

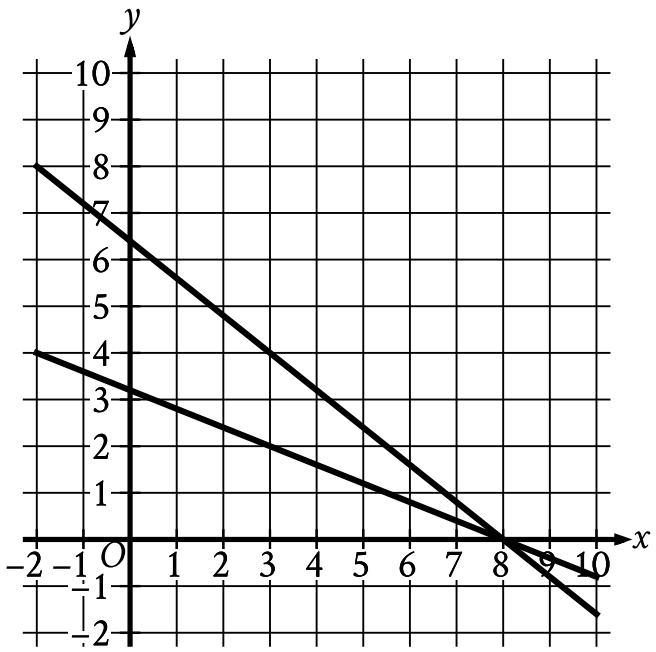
C. $(-\frac{8r}{7} + 9, \frac{8r}{7} + 27)$

D. $(\frac{r}{3} + 9, -\frac{r}{3} + 27)$

Question ID 612cefa6

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 612cefa6



What system of linear equations is represented by the lines shown?

A. $8x + 4y = 32$
$-10x - 4y = -64$

B. $8x - 4y = 32$
$-10x + 4y = -64$

C. $4x - 10y = 32$
$-8x + 10y = -64$

D. $4x + 10y = 32$
$-8x - 10y = -64$

Question ID 38f4e04c

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 38f4e04c

A bus traveled on the highway and on local roads to complete a trip of 160 miles. The trip took 4 hours. The bus traveled at an average speed of 55 miles per hour (mph) on the highway and an average speed of 25 mph on local roads. If x is the time, in hours, the bus traveled on the highway and y is the time, in hours, it traveled on local roads, which system of equations represents this situation?

A. $55x + 25y = 4$
$x + y = 160$

B. $55x + 25y = 160$
$x + y = 4$

C. $25x + 55y = 4$
$x + y = 160$

D. $25x + 55y = 160$
$x + y = 4$

Question ID 484d0c18

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 484d0c18

$$8x + y = 5$$
$$y = 9x + 1$$

The solution to the given system of equations is (x, y). What is the value of x?

A. -6

B. $\frac{4}{17}$

C. $\frac{6}{17}$

D. 4

Question ID f1048255

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: f1048255

$$y = 3x$$
$$2x + y = 12$$

The solution to the given system of equations is (x, y). What is the value of $5x$?

A. 24

B. 15

C. 12

D. 5

Question ID f6ffb4d2

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: f6ffb4d2

$$24x + y = 48$$
$$6x + y = 72$$

The solution to the given system of equations is (x, y). What is the value of y?

Question ID 9de99d25

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 9de99d25

$$\frac{7}{8}y - \frac{5}{8}x = \frac{4}{7} - \frac{7}{8}y$$
$$\frac{5}{4}x + \frac{7}{4} = py + \frac{15}{4}$$

In the given system of equations, p is a constant. If the system has no solution, what is the value of p?

Question ID bbc6a2a2

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: bbc6a2a2

$$x + 2y = 6$$
$$x - 2y = 4$$

The solution to the given system of equations is (x, y). What is the value of x?

A. 2.5

B. 5

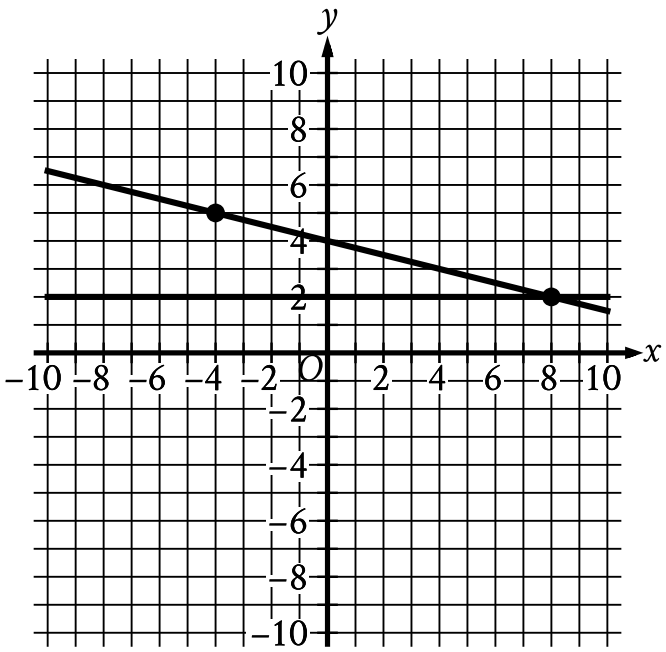
C. 6

D. 10

Question ID 520d8c3b

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 520d8c3b



If a new graph of three linear equations is created using the system of equations shown and the equation $x + 4y = -16$, how many solutions (x, y) will the resulting system of three equations have?

A. Zero

B. Exactly one

C. Exactly two

D. Infinitely many

Question ID 8a3bc140

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 8a3bc140

$$y = \frac{1}{3}x - 14$$
$$y = -x + 18$$

The solution to the given system of equations is (x, y). What is the value of x?

Question ID d69a8772

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: d69a8772

$$5y = 10x + 11$$
$$-5y = 5x - 21$$

The solution to the given system of equations is (x, y). What is the value of $30x$?

Question ID 1bbdd17a

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 1bbdd17a

$$x + 3 = -2y + 5$$
$$x - 3 = 2y + 7$$

The solution to the given system of equations is (x, y). What is the value of $2x$?

A. -2

B. 6

C. 12

D. 24

Question ID 6dcc9313

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 6dcc9313

Store A sells raspberries for $\$5.50$ per pint and blackberries for $\$3.00$ per pint. Store B sells raspberries for $\$6.50$ per pint and blackberries for $\$8.00$ per pint. A certain purchase of raspberries and blackberries would cost $\$37.00$ at Store A or $\$66.00$ at Store B. How many pints of blackberries are in this purchase?

A. 4

B. 5

C. 8

D. 12

Question ID 577c07fc

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 577c07fc

$$3x = 36y - 45$$

One of the two equations in a system of linear equations is given. The system has no solution. Which equation could be the second equation in this system?

A. $x = 4y$

B. $\frac{1}{3}x = 4y$

C. $x = 12y - 15$

D. $\frac{1}{3}x = 12y - 15$

Question ID b5f35989

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: b5f35989

$$y = -\frac{1}{5}x$$
$$y = \frac{1}{7}x$$

The solution to the given system of equations is (x, y). What is the value of x?

A. -5

B. 0

C. 2

D. 7

Question ID 13158731

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 13158731

$$-12x + 14y = 36$$
$$-6x + 7y = -18$$

How many solutions does the given system of equations have?

A. Exactly one

B. Exactly two

C. Infinitely many

D. Zero

Question ID 180d85b8

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 180d85b8

A proposal for a new library was included on an election ballot. A radio show stated that 3 times as many people voted in favor of the proposal as people who voted against it. A social media post reported that $15{,}000$ more people voted in favor of the proposal than voted against it. Based on these data, how many people voted against the proposal?

A. $7{,}500$

B. $15{,}000$

C. $22{,}500$

D. $45{,}000$

Question ID 51b5bf01

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 51b5bf01

The combined original price for a mirror and a vase is $\$60$. After a 25% discount to the mirror and a 45% discount to the vase are applied, the combined sale price for the two items is $\$39$. Which system of equations gives the original price m, in dollars, of the mirror and the original price v, in dollars, of the vase?

A. $m + v = 60$
$0.55m + 0.75v = 39$

B. $m + v = 60$
$0.45m + 0.25v = 39$

C. $m + v = 60$
$0.75m + 0.55v = 39$

D. $m + v = 60$
$0.25m + 0.45v = 39$

Question ID 85a3762d

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 85a3762d

The sum of a number x and 7 is twice as large as a number y. The number y is 3 less than the number x. Which system of equations describes this situation?

A. $x + 7 = 2y$
$y = x - 3$

B. $x + 7 = 2y$
$y = 3 - x$

C. $2(x + 7) = y$
$y = x - 3$

D. $2(x + 7) = y$
$y = 3 - x$

Question ID 83b4b5ad

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 83b4b5ad

$$(x-2)-4(y+7)=117$$
$$(x-2)+4(y+7)=442$$

The solution to the given system of equations is (x, y). What is the value of $6(x-2)$?

Question ID a7bb4e30

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: a7bb4e30

$$y - 9x = 13$$
$$5x = 2y$$

What is the solution (x, y) to the given system of equations?

A. $(\frac{5}{2}, 1)$

B. $(1, \frac{2}{5})$

C. $(-2, -5)$

D. $(-5, -2)$

Question ID 4fbd7122

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 4fbd7122

$$y = -2x$$
$$3x + y = 40$$

The solution to the given system of equations is (x, y). What is the value of x?

Question ID eb467dfd

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: eb467dfd

At how many points do the graphs of the equations $y = x + 20$ and $y = 8x$ intersect in the *xy*-plane?

A. 0

B. 1

C. 2

D. 8

Question ID a8a2490b

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: a8a2490b

In August, a car dealer completed 15 more than 3 times the number of sales the car dealer completed in September. In August and September, the car dealer completed 363 sales. How many sales did the car dealer complete in September?

Question ID 7594f779

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 7594f779

$$\frac{7}{2}x + 6y = 25$$
$$\frac{5}{2}x + 6y = 23$$

The solution to the given system of equations is (x, y). What is the value of $\frac{17}{2}x + 18y$?

A. 2

B. 3

C. 48

D. 71

Question ID 3aad6202

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 3aad6202

A sample of a certain alloy has a total mass of 50.0 grams and is 50.0% silicon by mass. The sample was created by combining two pieces of different alloys. The first piece was 30.0% silicon by mass and the second piece was 80.0% silicon by mass. What was the mass, in grams, of the silicon in the second piece?

A. 9.0

B. 16.0

C. 20.0

D. 30.0

Question ID 3d39d100

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 3d39d100

$$7x + 6y = 5$$
$$28x + 24y = 20$$

For each real number r, which of the following points lies on the graph of each equation in the *xy*-plane for the given system?

A. $(r, -\frac{6r}{7} + \frac{5}{7})$

B. $(r, \frac{7r}{6} + \frac{5}{6})$

C. $(\frac{r}{4} + 5, -\frac{r}{4} + 20)$

D. $(-\frac{6r}{7} + \frac{5}{7}, r)$

Question ID 87b1b2ab

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 87b1b2ab

Two customers purchased the same kind of bread and eggs at a store. The first customer paid 12.45 dollars for 1 loaf of bread and 2 dozen eggs. The second customer paid 19.42 dollars for 4 loaves of bread and 1 dozen eggs. What is the cost, in dollars, of 1 dozen eggs?

A. 3.77

B. 3.88

C. 4.15

D. 4.34

Question ID 2a6cd47c

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 2a6cd47c

$$y = \frac{2}{7}x + 3$$

One of the two equations in a system of linear equations is given. The system has infinitely many solutions. If the second equation in the system is $y = mx + b$, where m and b are constants, what is the value of b?

A. -3

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

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

D. 3

Question ID b3cb25e2

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: b3cb25e2

$$x + 3y = 29$$
$$3y = 11$$

The solution to the given system of equations is (x, y). What is the value of x?

Question ID 22ddfcc6

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 22ddfcc6

Which system of linear equations has no solution?

A. $-2x + 3y = -9$
$2x - 3y = 9$

B. $2x - 3y = 9$
$3x + 4y = 10$

C. $2x - 3y = 9$
$-6x + 9y = -27$

D. $-2x + 3y = 9$
$4x - 6y = 18$

Question ID 69831c61

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 69831c61

A piece of wire with a length of 32 inches is cut into two parts. One part has a length of x inches, and the other part has a length of y inches. The value of x is 4 more than 3 times the value of y. What is the value of x?

Question ID ccb6e50f

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: ccb6e50f

$$y = 6x + 3$$

One of the two equations in a system of linear equations is given. The system has infinitely many solutions. Which equation could be the second equation in this system?

A. $y = 2(6x) + 3$

B. $y = 2(6x + 3)$

C. $2(y) = 2(6x) + 3$

D. $2(y) = 2(6x + 3)$

Question ID 70ba140a

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 70ba140a

A company that provides whale-watching tours takes groups of 21 people at a time. The company's revenue is 80 dollars per adult and 60 dollars per child. If the company's revenue for one group consisting of adults and children was $1{,}440$ dollars, how many people in the group were children?

A. 3

B. 9

C. 12

D. 18

Question ID 3bf6f7ad

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 3bf6f7ad

$$y = 9x + 12$$
$$x + 7y = 20$$

The solution to the given system of equations is (x, y). What is the value of y?

Question ID 3dae14f0

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 3dae14f0

$$y = 2x + 10$$
$$y = 2x - 1$$

At how many points do the graphs of the given equations intersect in the *xy*-plane?

A. Zero

B. Exactly one

C. Exactly two

D. Infinitely many

Question ID aac69209

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: aac69209

$$3y = 4x + 17$$
$$-3y = 9x - 23$$

The solution to the given system of equations is (x, y). What is the value of $39x$?

A. -18

B. -6

C. 6

D. 18

Question ID 9551313d

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: 9551313d

$$y = 6x + 16$$
$$-7x - y = 36$$

What is the solution (x, y) to the given system of equations?

A. $(-4, -8)$

B. $(-\frac{20}{13}, -\frac{80}{13})$

C. $(4, 40)$

D. $(20, 136)$

Question ID f11c61c6

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	Hard

ID: f11c61c6

$$5x + 14y = 45$$
$$10x + 7y = 27$$

The solution to the given system of equations is (x, y). What is the value of xy?