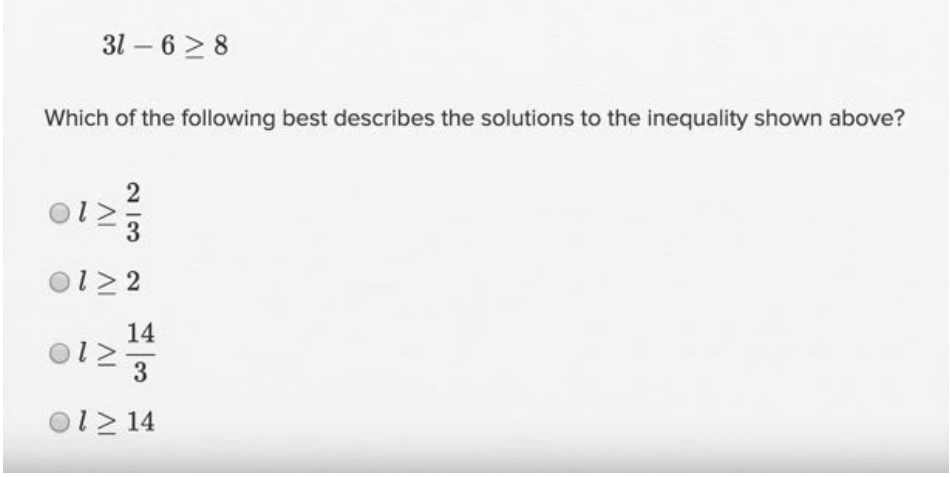
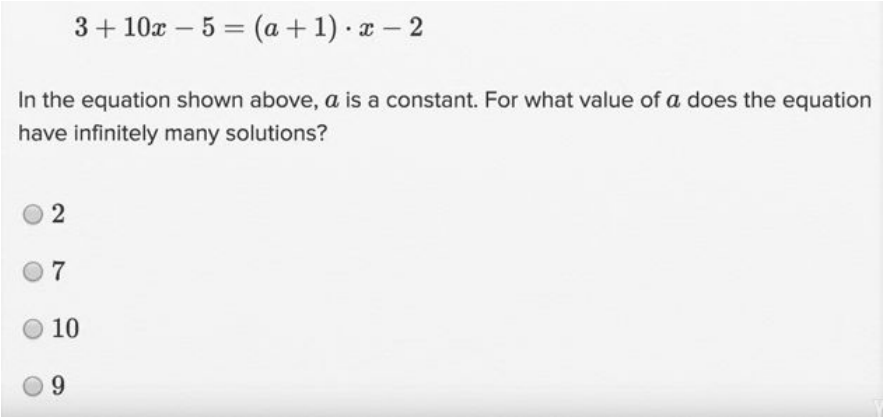
Overview of The New SAT- Math

Solving Linear Equations

Solving Linear Equations- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h6-easier



Solving Linear Equations- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h6-harder



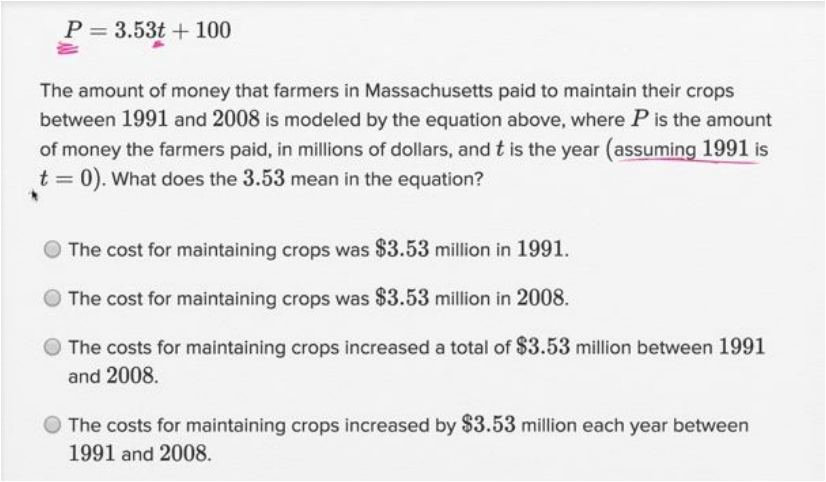
$$3 + 10x - 5 = (a + 1) \cdot x - 2$$

In the equation shown above, a is a constant. For what value of a does the equation have infinitely many solutions?

- 2
- 7
- 10
- 9

Interpreting Linear Functions

Interpreting Linear Functions-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h8-easier

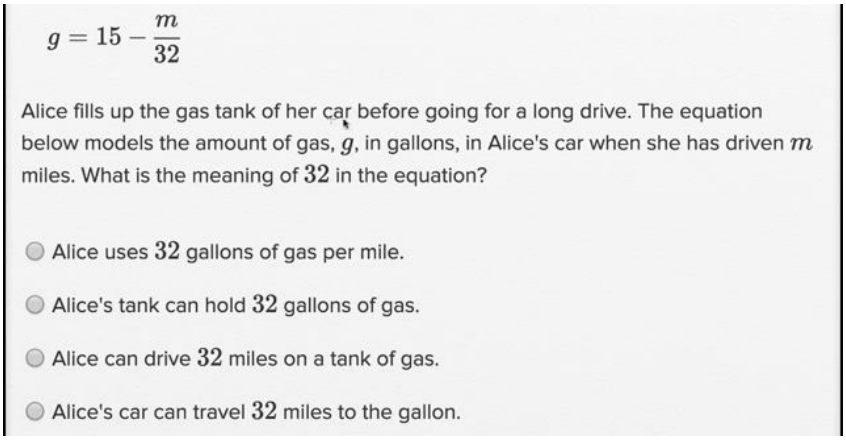


$$P = 3.53t + 100$$

The amount of money that farmers in Massachusetts paid to maintain their crops between 1991 and 2008 is modeled by the equation above, where P is the amount of money the farmers paid, in millions of dollars, and t is the year (assuming 1991 is $t = 0$). What does the 3.53 mean in the equation?

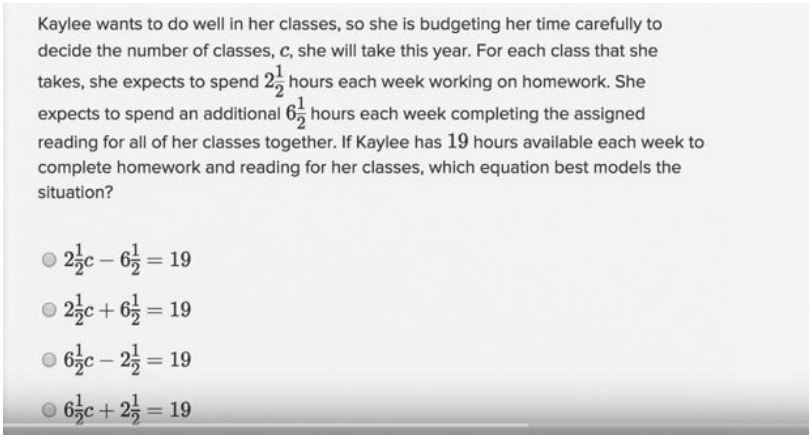
- The cost for maintaining crops was $\$3.53$ million in 1991.
- The cost for maintaining crops was $\$3.53$ million in 2008.
- The costs for maintaining crops increased a total of $\$3.53$ million between 1991 and 2008.
- The costs for maintaining crops increased by $\$3.53$ million each year between 1991 and 2008.

Interpreting Linear Functions-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h8-harder

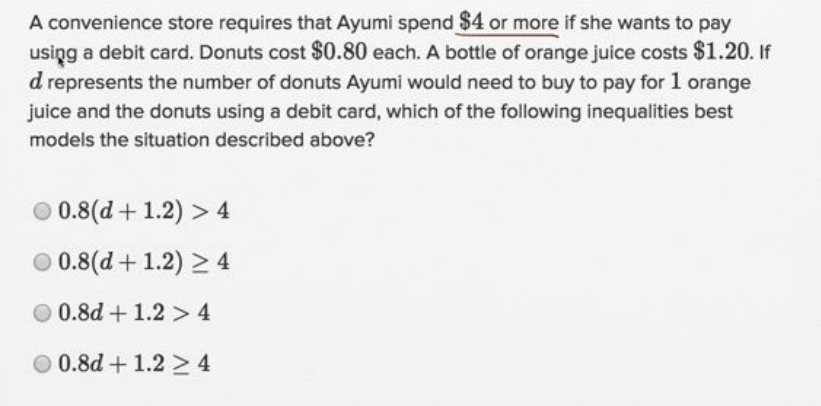


Linear Equation Word Functions

Linear Equation Word Functions- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-linear-equation-easier



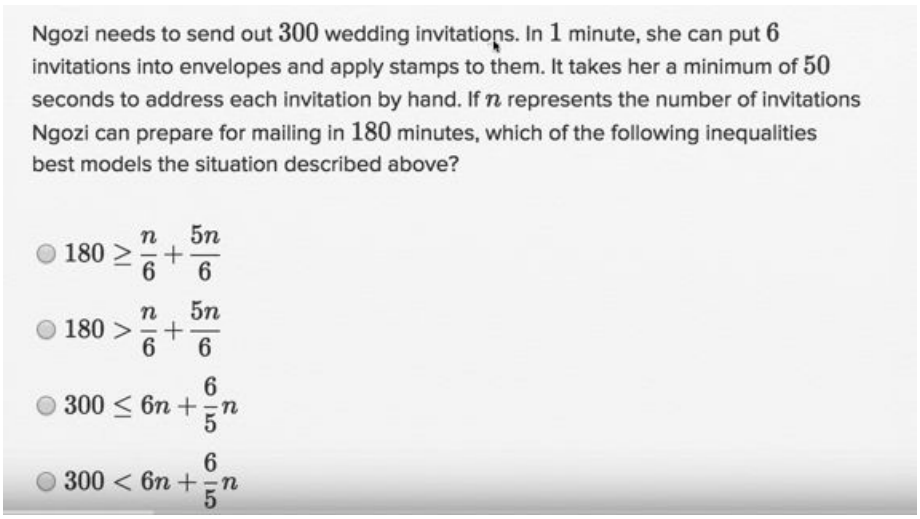
Linear Equation Word Functions- Basic # 2	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h2-easier



A convenience store requires that Ayumi spend $4 or more if she wants to pay using a debit card. Donuts cost $0.80 each. A bottle of orange juice costs $1.20. If d represents the number of donuts Ayumi would need to buy to pay for 1 orange juice and the donuts using a debit card, which of the following inequalities best models the situation described above?

- $0.8(d+1.2) > 4$
- $0.8(d+1.2) \geq 4$
- $0.8d + 1.2 > 4$
- $0.8d + 1.2 \geq 4$

Linear Equation Word Functions- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h2-harder

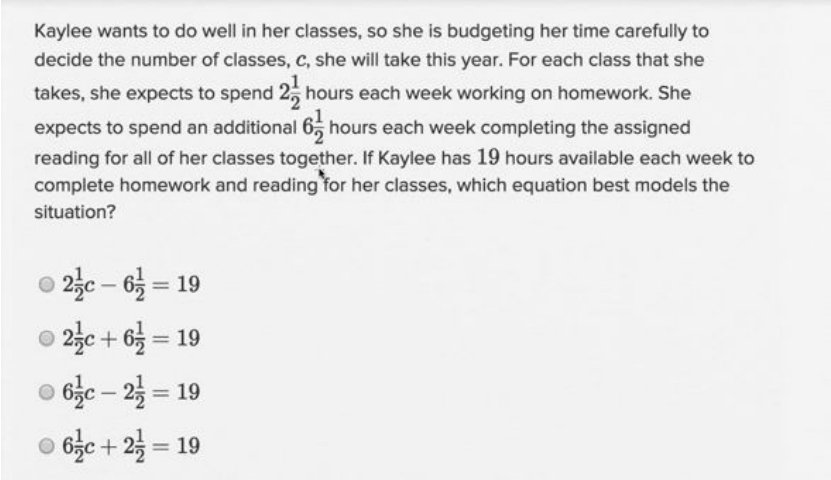


Ngozi needs to send out 300 wedding invitations. In 1 minute, she can put 6 invitations into envelopes and apply stamps to them. It takes her a minimum of 50 seconds to address each invitation by hand. If n represents the number of invitations Ngozi can prepare for mailing in 180 minutes, which of the following inequalities best models the situation described above?

- $180 \geq \frac{n}{6} + \frac{5n}{6}$
- $180 > \frac{n}{6} + \frac{5n}{6}$
- $300 \leq 6n + \frac{6}{5}n$
- $300 < 6n + \frac{6}{5}n$

Linear Inequality Word Problems

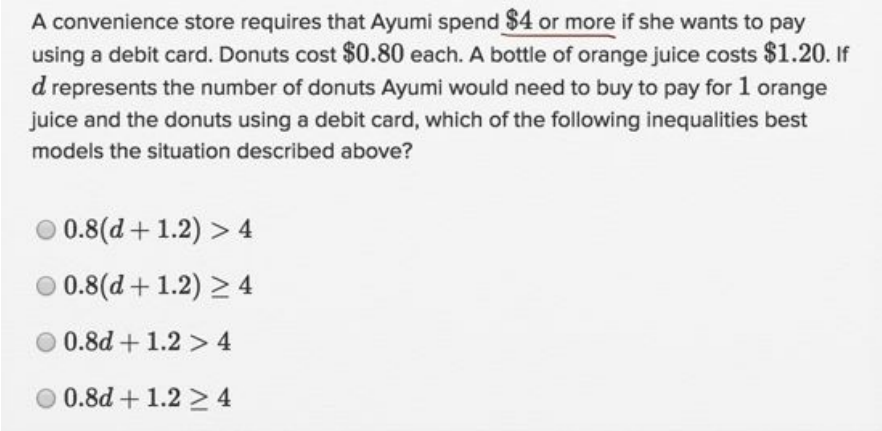
Linear Inequality Word Problems- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-linear-equation-easier



Kaylee wants to do well in her classes, so she is budgeting her time carefully to decide the number of classes, c, she will take this year. For each class that she takes, she expects to spend $2\frac{1}{2}$ hours each week working on homework. She expects to spend an additional $6\frac{1}{2}$ hours each week completing the assigned reading for all of her classes together. If Kaylee has 19 hours available each week to complete homework and reading for her classes, which equation best models the situation?

- $2\frac{1}{2}c - 6\frac{1}{2} = 19$
- $2\frac{1}{2}c + 6\frac{1}{2} = 19$
- $6\frac{1}{2}c - 2\frac{1}{2} = 19$
- $6\frac{1}{2}c + 2\frac{1}{2} = 19$

Linear Inequality Word Problems- Basic #2	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h2-easier



A convenience store requires that Ayumi spend $\$4$ or more if she wants to pay using a debit card. Donuts cost $\$0.80$ each. A bottle of orange juice costs $\$1.20$. If d represents the number of donuts Ayumi would need to buy to pay for 1 orange juice and the donuts using a debit card, which of the following inequalities best models the situation described above?

- $0.8(d + 1.2) > 4$
- $0.8(d + 1.2) \geq 4$
- $0.8d + 1.2 > 4$
- $0.8d + 1.2 \geq 4$

Linear Inequality Word Problems- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h2-harder

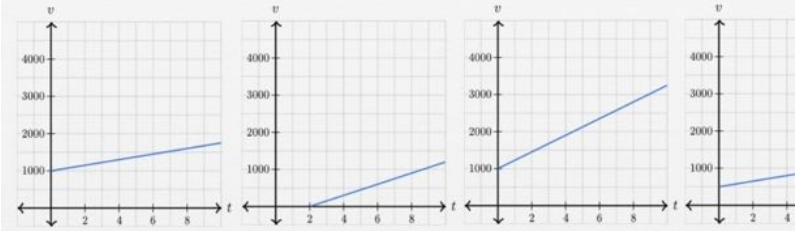
Ngozi needs to send out 300 wedding invitations. In 1 minute, she can put 6 invitations into envelopes and apply stamps to them. It takes her a minimum of 50 seconds to address each invitation by hand. If n represents the number of invitations Ngozi can prepare for mailing in 180 minutes, which of the following inequalities best models the situation described above?

- $180 \geq \frac{n}{6} + \frac{5n}{6}$
- $180 > \frac{n}{6} + \frac{5n}{6}$
- $300 \leq 6n + \frac{6}{5}n$
- $300 < 6n + \frac{6}{5}n$

Graphing Linear Equations

Graphing Linear Equations-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h9-easier

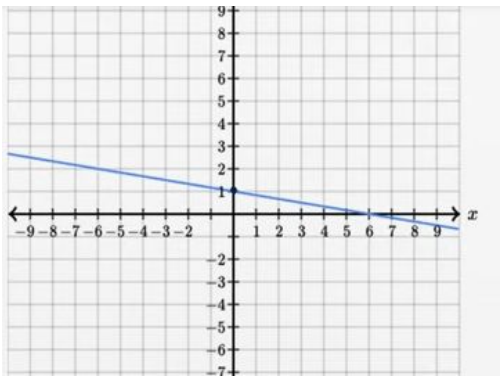
The value of a bond on January 1st, 2014 is $\$1{,}000$. Each year the value of the bond increases linearly by $\$75$. Which graph below represents v, the dollar value of the bond, as a function of t, the number of years after January 1st, 2014?



Graphing Linear Equations-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h9-harder

A line is graphed in the xy-plane as shown above. Which of the following equations represents the line?

- $x + 6y = 1$
- $x + 6y = 6$
- $x - 6y = 1$
- $x - 6y = -6$



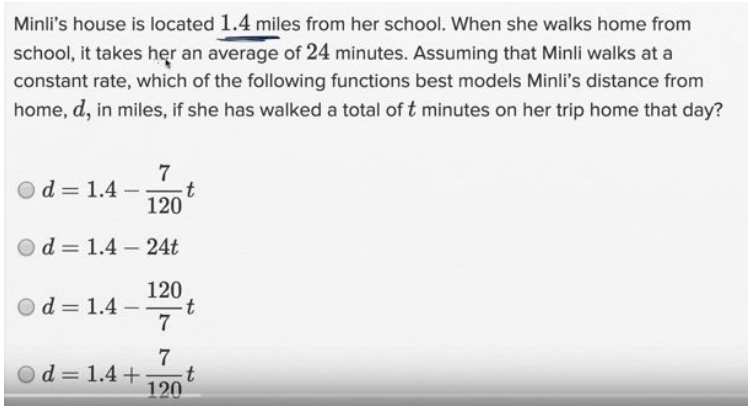
Linear Function Word Problems

Linear Function Word Problems- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h3-easier

A college bookstore charges $\$60$ for a yearly membership. The first book is free with the membership, and any book after that costs $\$7.60$ including tax. How much money, m, does a student spend after buying b books and a yearly membership?

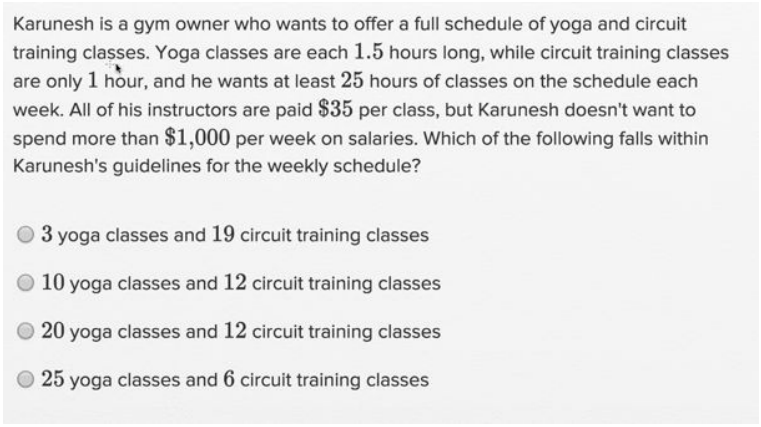
- $m = 7.60b$
- $m = 7.60(b - 1)$
- $m = 7.60b + 60$
- $m = 7.60(b - 1) + 60$

Linear Function Word Problems- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h3-harder

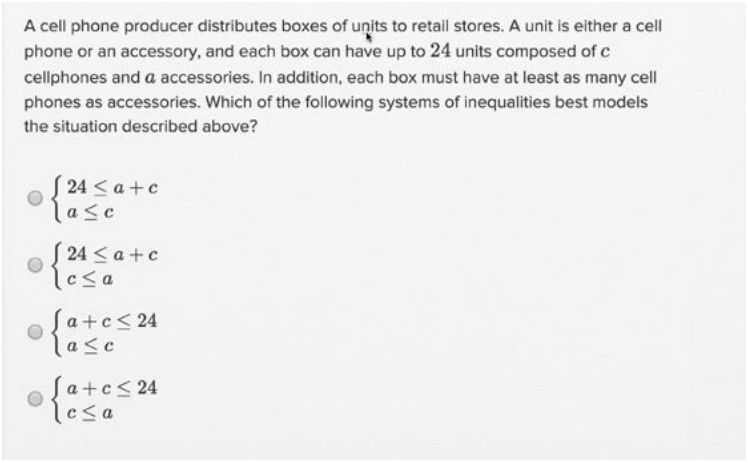


Systems of Linear Inequalities Word Problems

Systems of Linear Inequalities Word Problems-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h4-easier

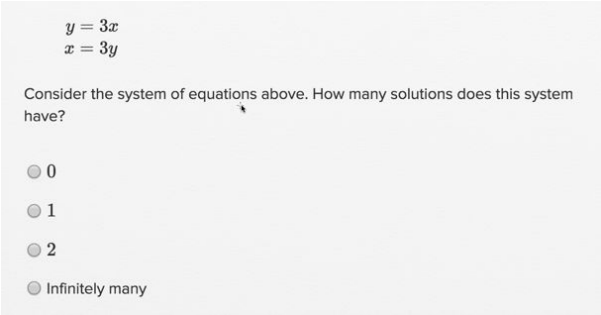


Systems of Linear Inequalities Word Problems-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h4-harder

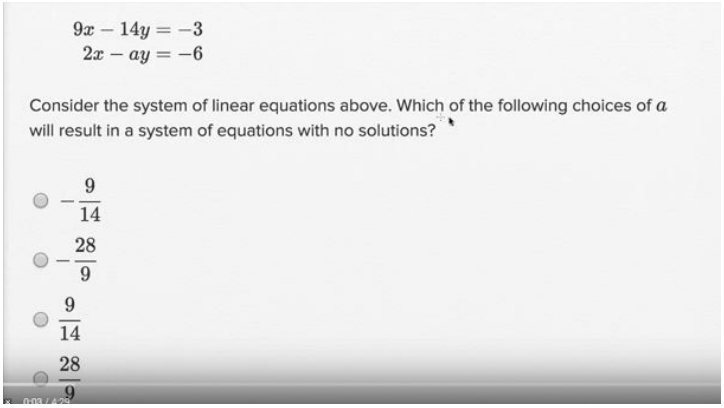


Solving Systems of Linear Equations

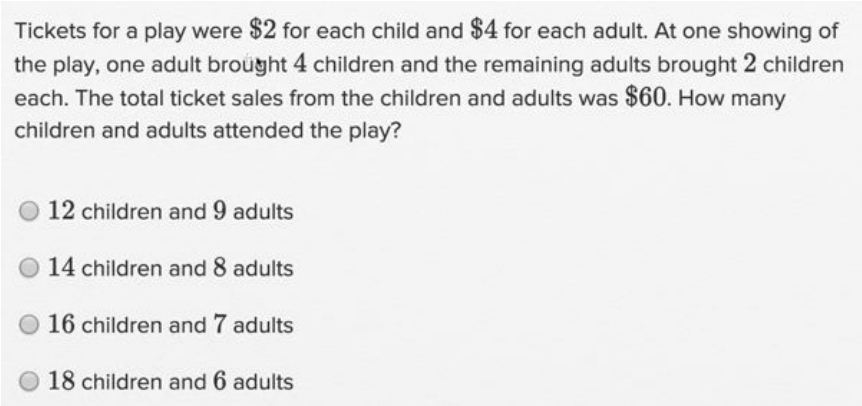
Solving Systems of Linear Equations-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h7-easier



Solving Systems of Linear Equations-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h7-harder

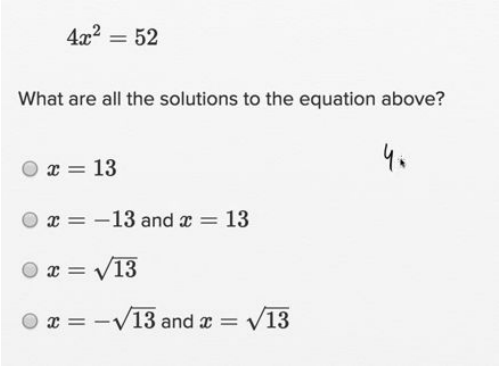


Systems of Linear Equations Word Problems	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-heart-of-algebra/v/sat-math-h5-harder

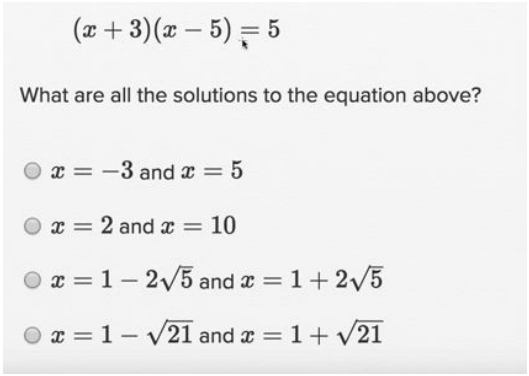


Solving Quadratic Equations

Solving Quadratic Equations-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p5-easier

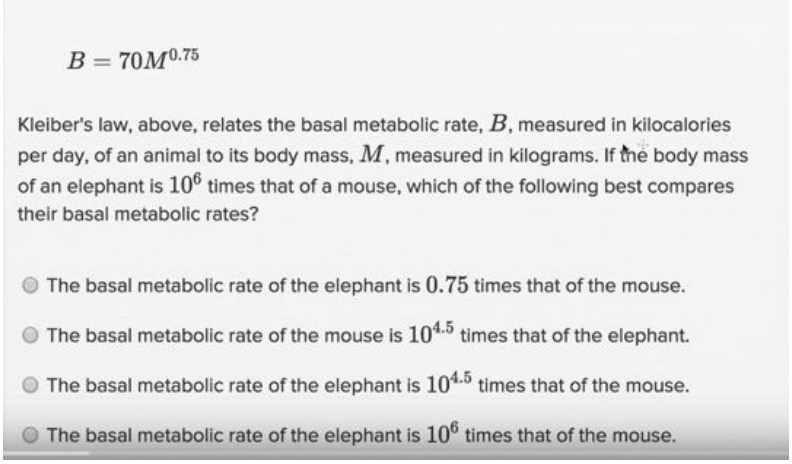


Solving Quadratic Equations-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p5-harder



Interpreting Nonlinear Expressions

Interpreting Nonlinear Expressions- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p10-easier

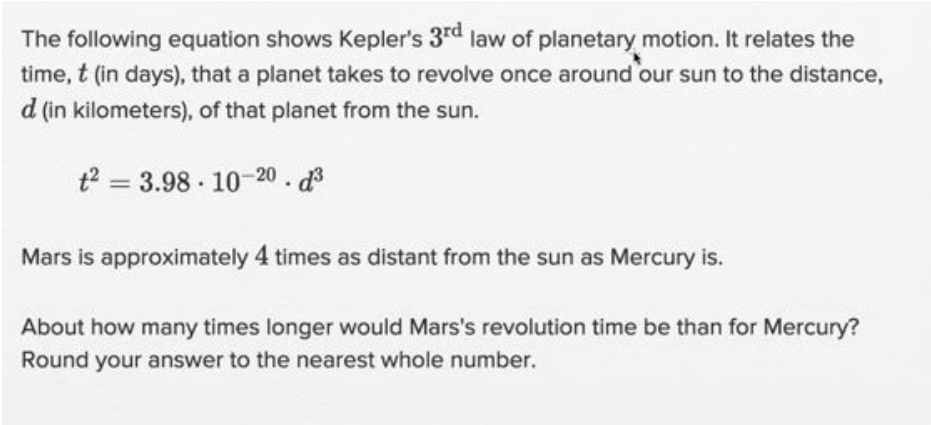


$$B = 70M^{0.75}$$

Kleiber's law, above, relates the basal metabolic rate, B, measured in kilocalories per day, of an animal to its body mass, M, measured in kilograms. If the body mass of an elephant is 10^6 times that of a mouse, which of the following best compares their basal metabolic rates?

- The basal metabolic rate of the elephant is 0.75 times that of the mouse.
- The basal metabolic rate of the mouse is $10^{4.5}$ times that of the elephant.
- The basal metabolic rate of the elephant is $10^{4.5}$ times that of the mouse.
- The basal metabolic rate of the elephant is 10^6 times that of the mouse.

Interpreting Nonlinear Expressions-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p10-harder



The following equation shows Kepler's 3^{rd} law of planetary motion. It relates the time, t (in days), that a planet takes to revolve once around our sun to the distance, d (in kilometers), of that planet from the sun.

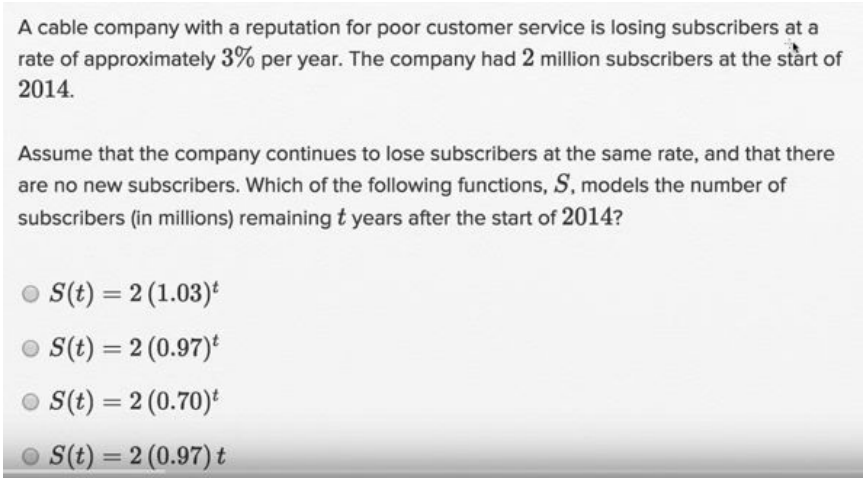
$$t^2 = 3.98 \cdot 10^{-20} \cdot d^3$$

Mars is approximately 4 times as distant from the sun as Mercury is.

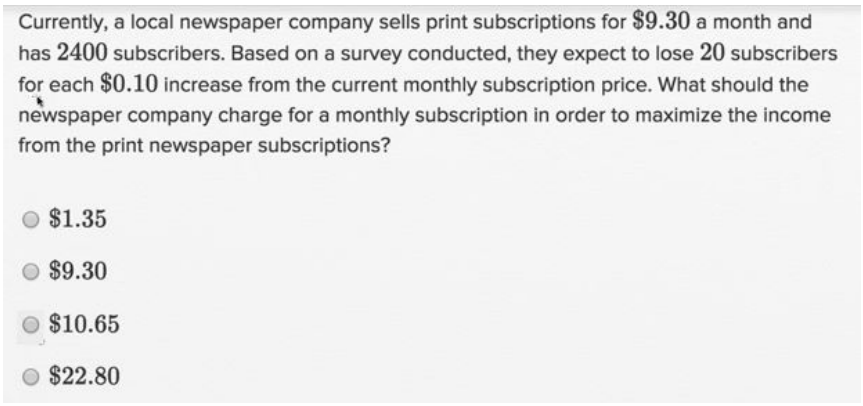
About how many times longer would Mars's revolution time be than for Mercury? Round your answer to the nearest whole number.

Quadratic and Exponential Word Problems

Quadratic and Exponential Word Problems-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p1-easier

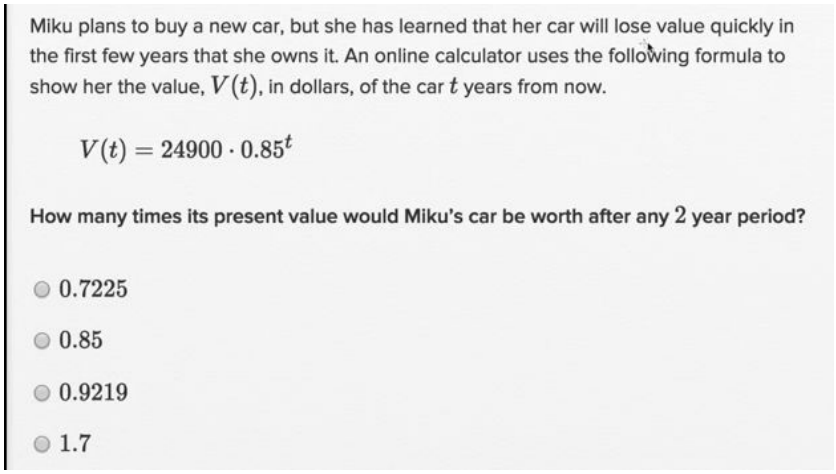


Quadratic and Exponential Word Problems-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p1-harder



Manipulating Quadratic and Exponential Expressions

Manipulating Quadratic and Exponential Expressions- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p2-easier



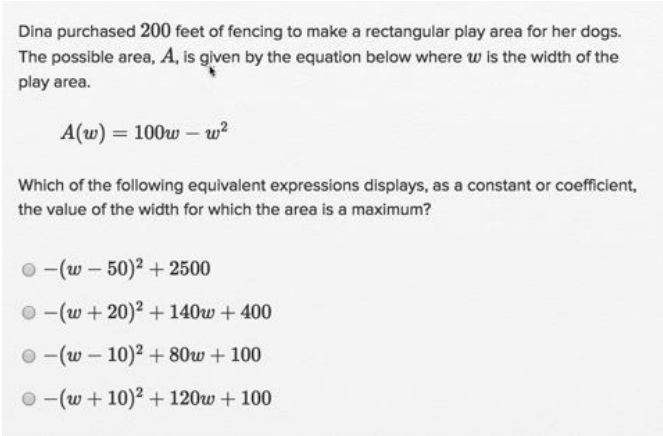
Miku plans to buy a new car, but she has learned that her car will lose value quickly in the first few years that she owns it. An online calculator uses the following formula to show her the value, $V(t)$, in dollars, of the car t years from now.

$$V(t) = 24900 \cdot 0.85^t$$

How many times its present value would Miku's car be worth after any 2 year period?

- 0.7225
- 0.85
- 0.9219
- 1.7

Manipulating Quadratic and Exponential Expressions- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p2-harder



Dina purchased 200 feet of fencing to make a rectangular play area for her dogs. The possible area, A, is given by the equation below where w is the width of the play area.

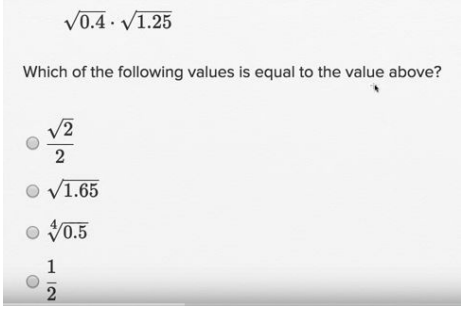
$$A(w) = 100w - w^2$$

Which of the following equivalent expressions displays, as a constant or coefficient, the value of the width for which the area is a maximum?

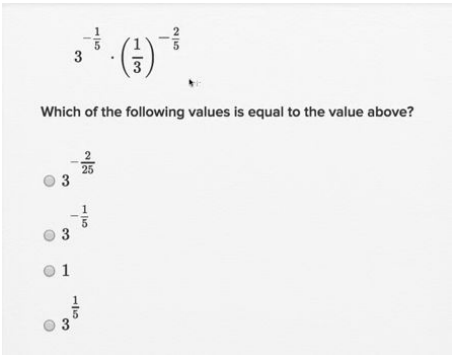
- $-(w-50)^2 + 2500$
- $-(w+20)^2 + 140w + 400$
- $-(w-10)^2 + 80w + 100$
- $-(w+10)^2 + 120w + 100$

Radicals and Rational Exponents

Radicals and Rational Exponents-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p3-easier

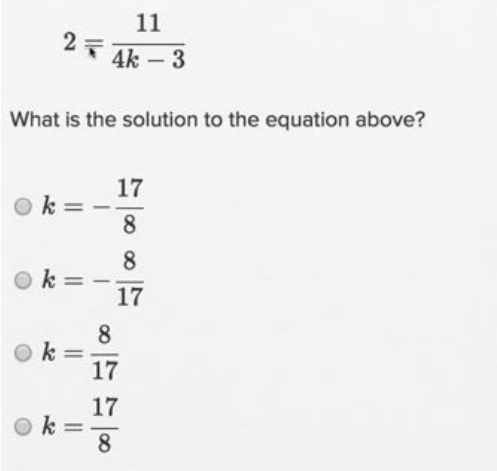


Radicals and Rational Exponents-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p3-harder

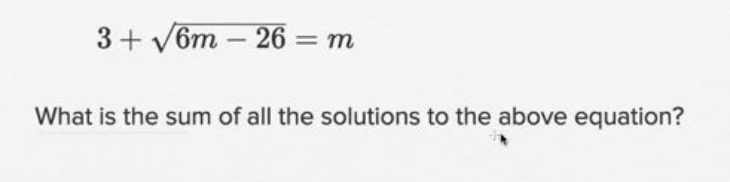


Radical and Rational Equations

Radical and Rational Equations-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p7-easier

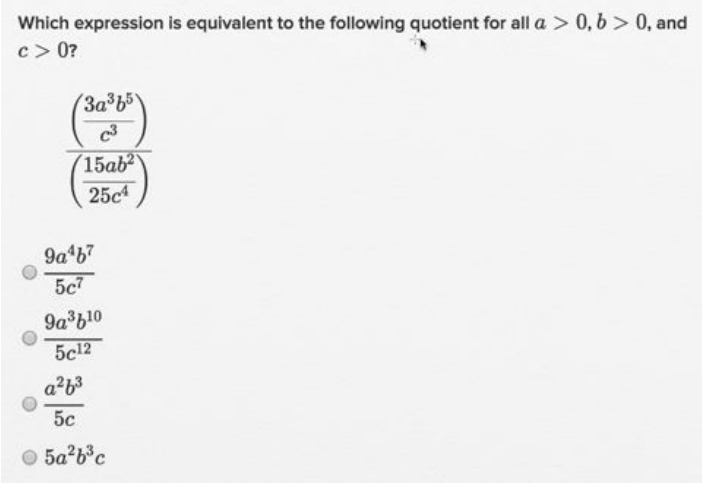


Radical and Rational Equations-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p7-harder

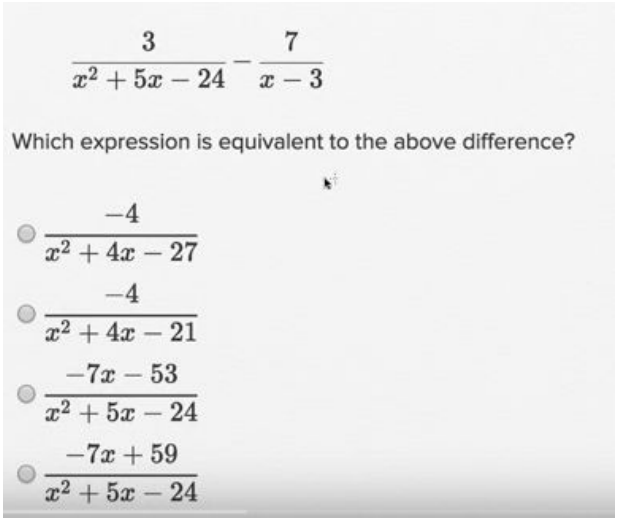


Operations with Rational Expressions

Operations with Rational Expressions- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p9-easier

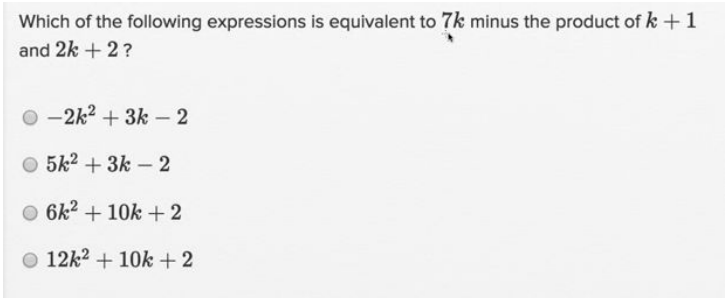


Operations with Rational Expressions- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p9-harder

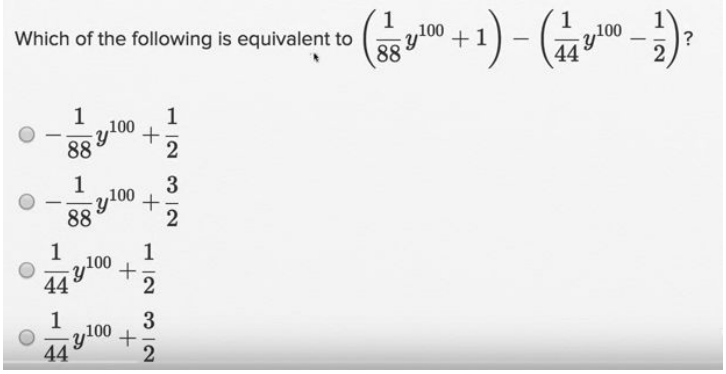


Operations with Polynomials

Operations with Polynomials- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p6-easier

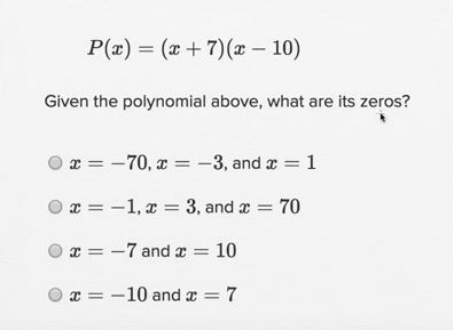


Operations with Polynomials-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p6-harder

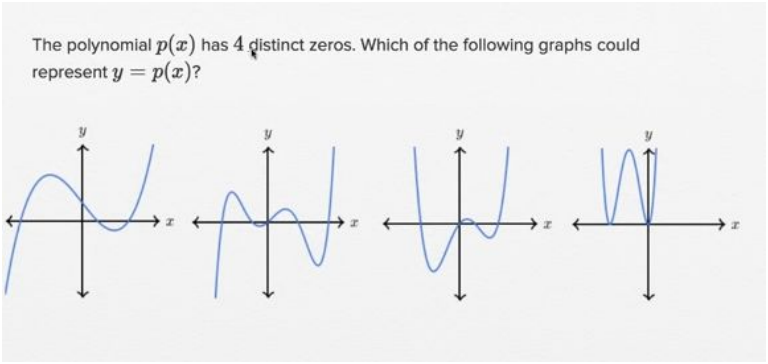


Polynomial Factors and Graphs

Polynomial Factors and Graphs-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p11-easier

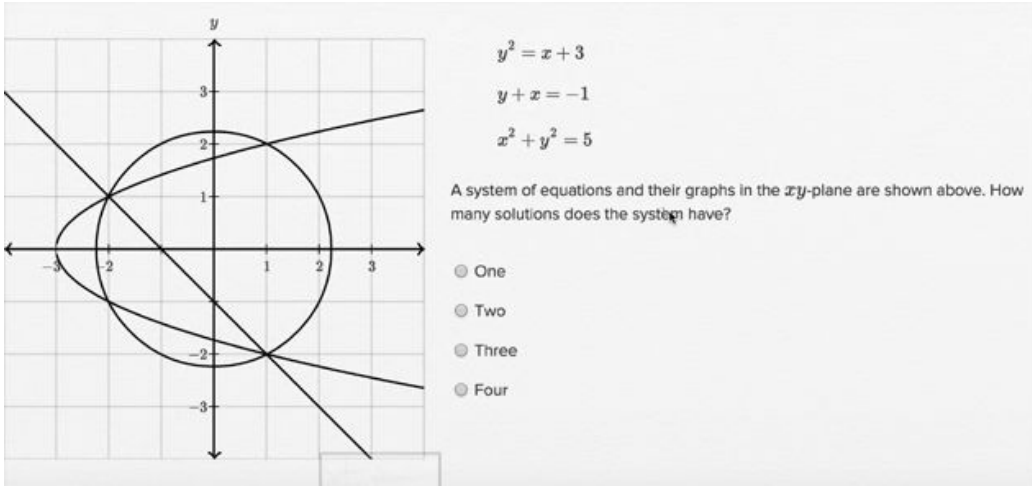


Polynomial Factors and Graphs-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p11-harder



Nonlinear Equation Graphs

Nonlinear Equation Graphs-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p12-easier



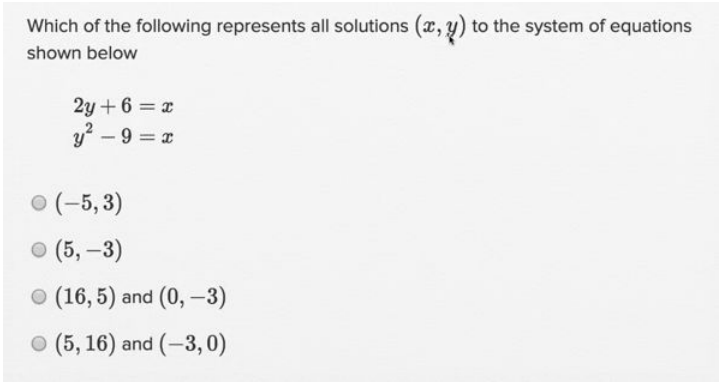
Nonlinear Equation Graphs-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p12-harder

The functions $y = 8\left(\frac{3}{4}\right)^x$ and $y = \frac{1}{8} \cdot \left(\frac{7}{4}\right)^x$ are graphed in the xy-plane. Which of the following statements accurately describes whether each function is always increasing or decreasing?

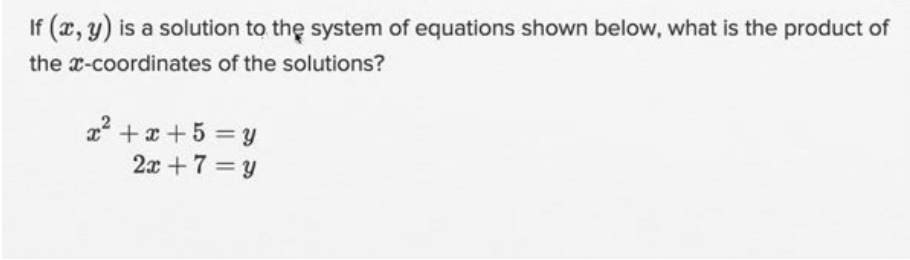
- The graphs of both functions are always increasing.
- The graphs of both functions are always decreasing.
- The graph of $y = 8\left(\frac{3}{4}\right)^x$ is always increasing, and the graph of $y = \frac{1}{8} \cdot \left(\frac{7}{4}\right)^x$ is always decreasing.
- The graph of $y = 8\left(\frac{3}{4}\right)^x$ is always decreasing, and the graph of $y = \frac{1}{8} \cdot \left(\frac{7}{4}\right)^x$ is always increasing.

Linear and Quadratic Systems

Linear and Quadratic Systems-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p8-easier

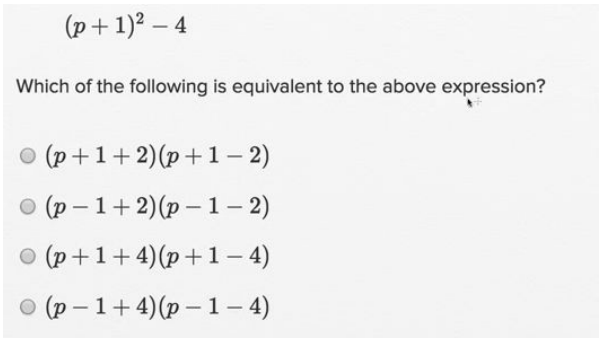


Linear and Quadratic Systems-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p8-harder

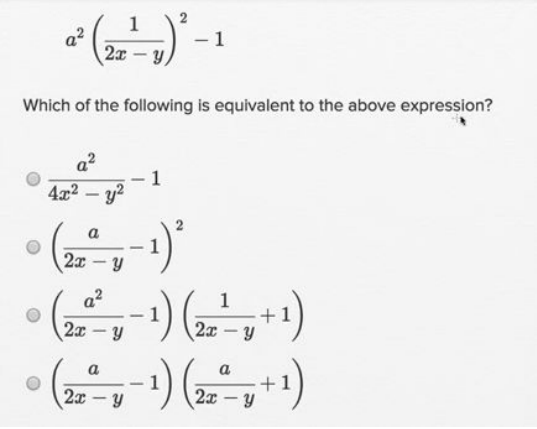


Structure in Expressions

Structure in Expressions- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p4-easier

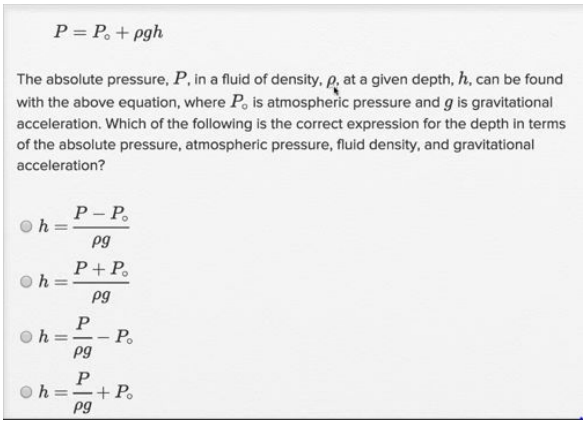


Structure in Expressions- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p4-harder



Isolating Quantities

Isolating Quantities- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p14-easier

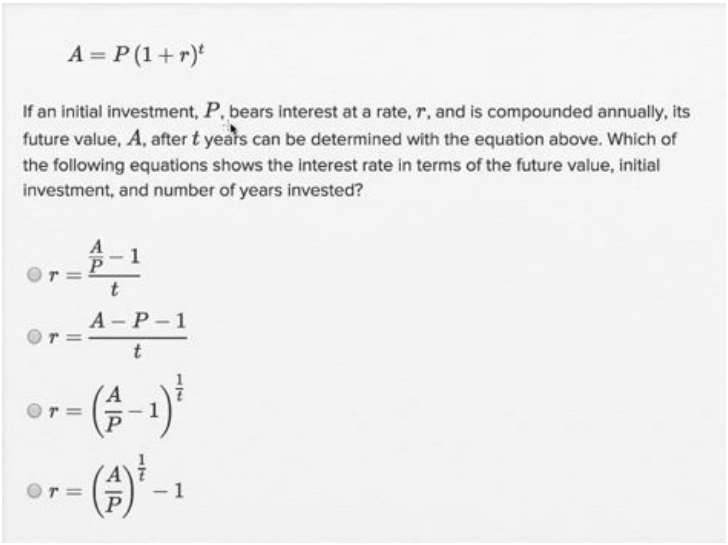


$P = P_\circ + \rho g h$

The absolute pressure, P, in a fluid of density, ρ, at a given depth, h, can be found with the above equation, where $P_\circ$ is atmospheric pressure and g is gravitational acceleration. Which of the following is the correct expression for the depth in terms of the absolute pressure, atmospheric pressure, fluid density, and gravitational acceleration?

- $h = \frac{P - P_\circ}{\rho g}$
- $h = \frac{P + P_\circ}{\rho g}$
- $h = \frac{P}{\rho g} - P_\circ$
- $h = \frac{P}{\rho g} + P_\circ$

Isolating Quantities- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p14-harder



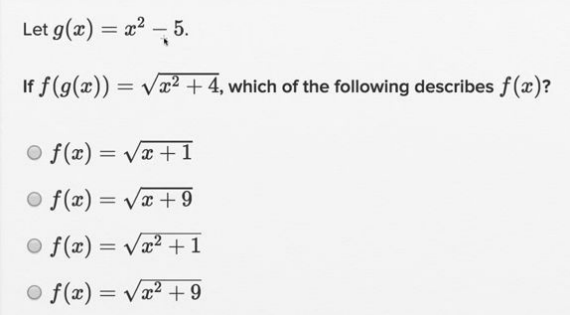
$A = P(1 + r)^t$

If an initial investment, P, bears interest at a rate, r, and is compounded annually, its future value, A, after t years can be determined with the equation above. Which of the following equations shows the interest rate in terms of the future value, initial investment, and number of years invested?

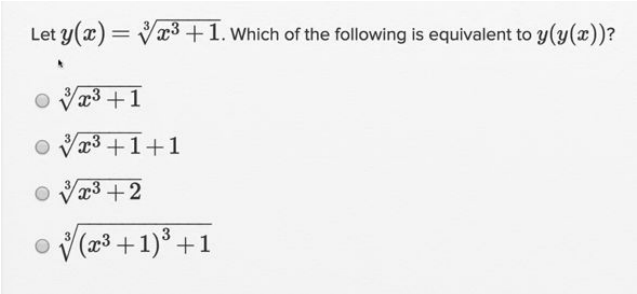
- $r = \frac{\frac{A}{P} - 1}{t}$
- $r = \frac{A - P - 1}{t}$
- $r = \left(\frac{A}{P} - 1\right)^{\frac{1}{t}}$
- $r = \left(\frac{A}{P}\right)^{\frac{1}{t}} - 1$

Function Notation

Function Notation-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p13-easier

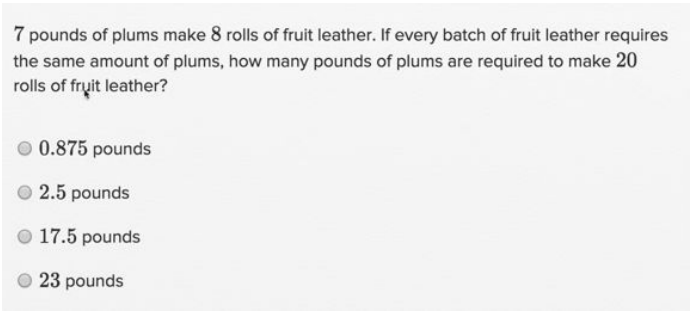


Function Notation- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-passport-advanced-mathematics/v/sat-math-p13-harder

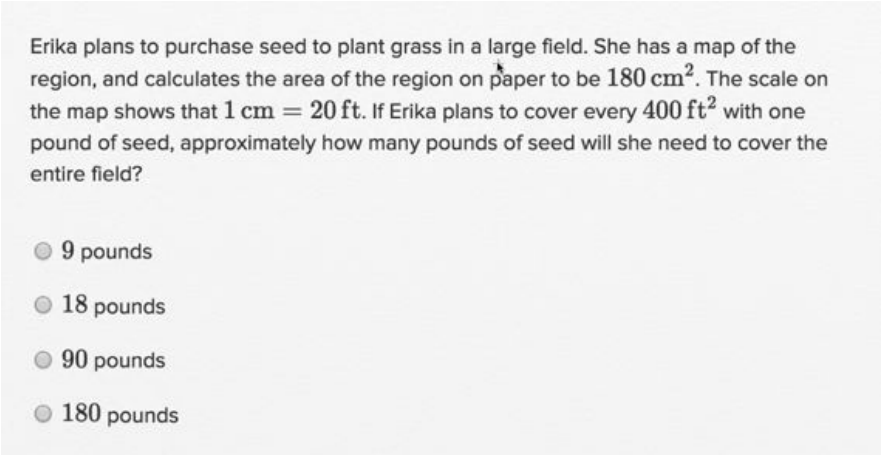


Ratios,Rates, and Proportions

Ratios,Rates, and Proportions-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q1-easier

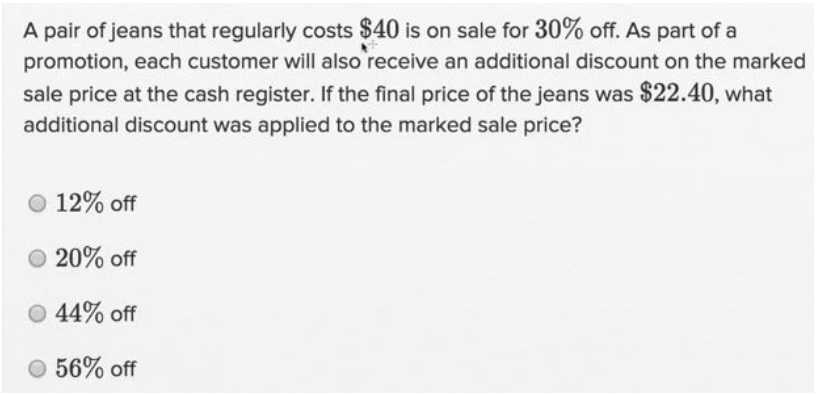


Ratios,Rates, and Proportions-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q1-harder

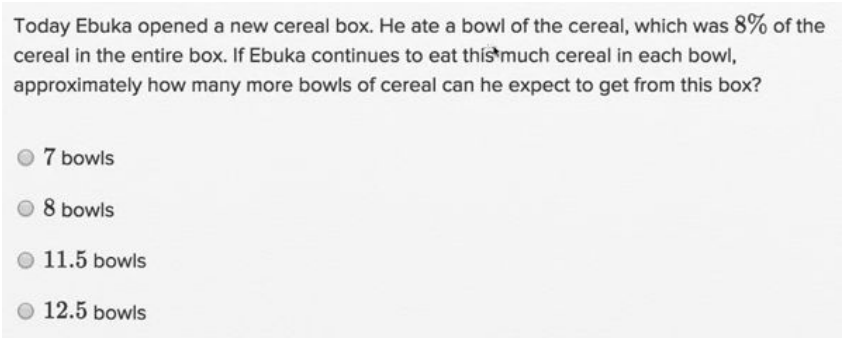


Percents

Percents- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q2-easier

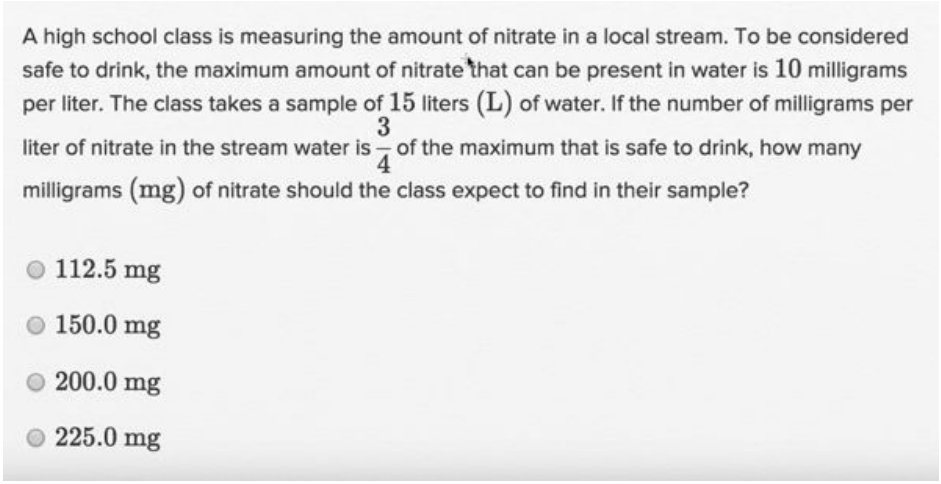


Percents- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q2-harder



Units

Units-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q3-easier



Units- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q3-harder

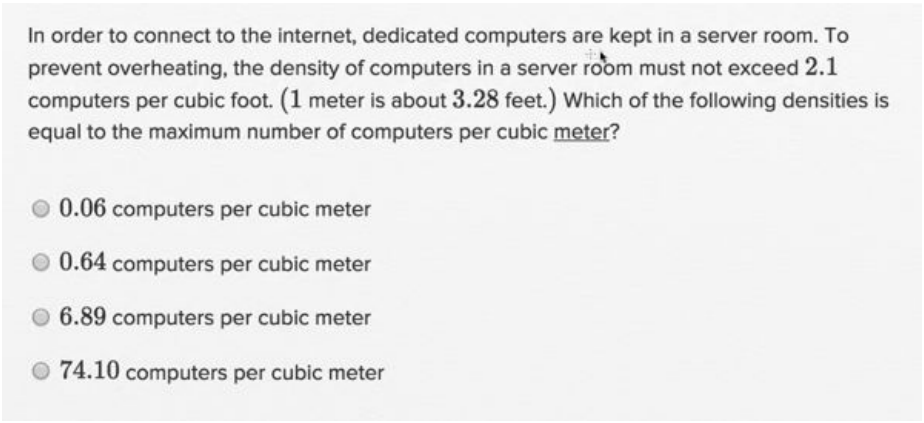


Table Data

Table Data- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-d

	ata-analysis/v/sat-math-q7-easier

Music preference	Male	Female	Total
Rock and roll	8	8	16
Pop	14	13	27
Classical	5	8	13
Rap	4	6	10
Country and western	2	2	4
Rhythm and blues	2	0	2
Total	35	37	72

A total of 72 people participated in a survey about their music preferences. The results, separated by gender, are displayed above. According to the survey, what is the probability that a male likes rap music?

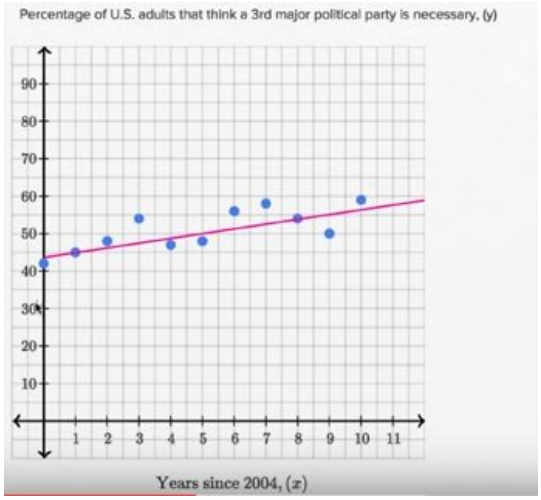
Table Data- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q7-harder

Dominant color	Large	Small	Total
Red	___	4	___
Blue	5	___	___
Total	___	___	24

Margo classified her favorite paintings hanging in a museum by both size and dominant color. The results are in the table above. Margo found that $\frac{1}{4}$ of her favorite large paintings were blue. How many of Margo's favorite paintings have red as the dominant color?

Scatterplots

Scatterplots-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q4-easier

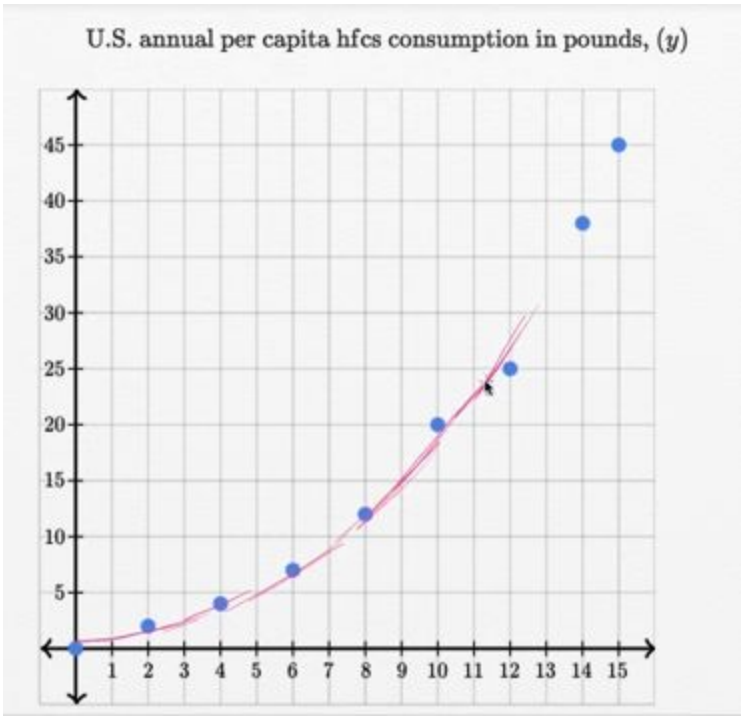


Each year, a group of statisticians poll $1{,}500$ randomly selected United States (U.S.) adults with the question: *"Are the Democratic and Republican parties doing an adequate job, or is a third major political party needed?"*

The scatter plot above shows the percentage of U.S. adults polled between the years 2004 and 2014 that think a third major political party is needed. Based on the line of best fit to the data shown, which of the following values is closest to the average yearly change in the percentage of people that think a third major political party is necessary?

- 1.30 percent
- 0.70 percent
- -0.70 percent
- -1.30 percent

Scatterplots-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q4-harder



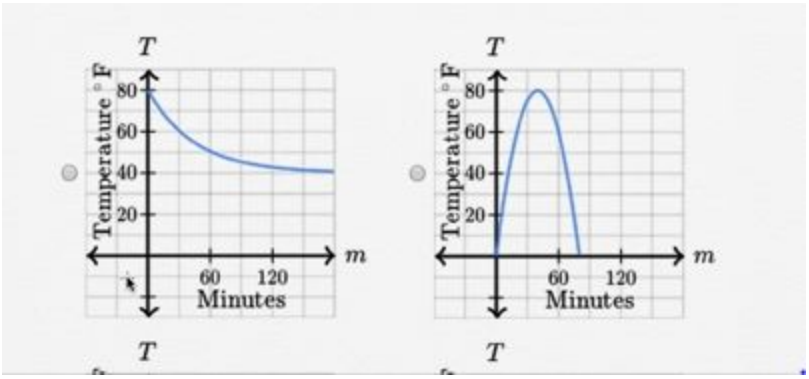
The scatter plot drawn above depicts the average annual United States per capita consumption of high fructose corn syrup (hfcs) between the years 1970 and 1985. Which of the following functions best describes the relationship shown?

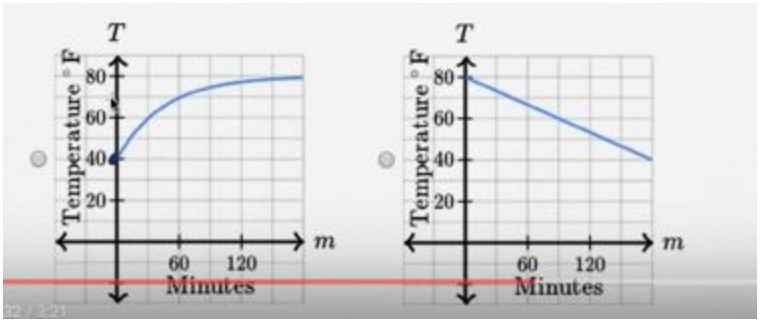
- $y = 0.201x^2 - 0.264x + 0.969$
- $y = -0.201x^2 - 0.264x + 0.969$
- $y = 201.00x^2 - 264.00x + 969.00$
- $y = -201.00x^2 - 264.00x + 969.00$

Key Features of Graphs

Key Features of Graphs- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q5-easier

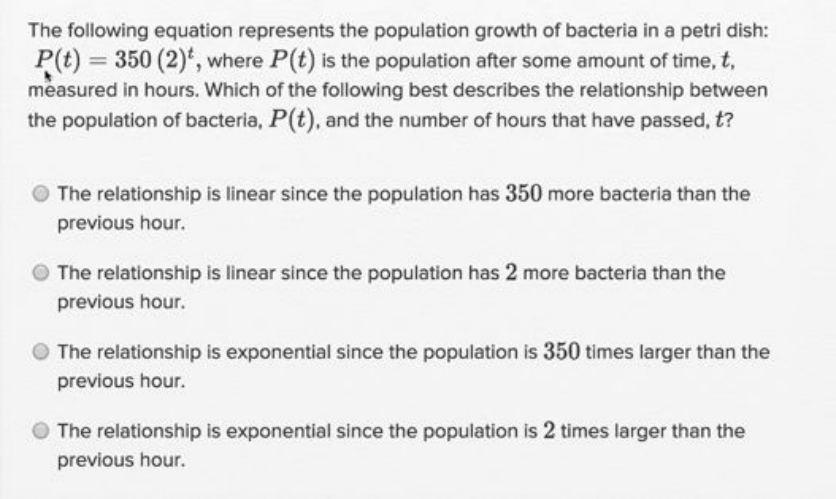
Ruby puts a dish of macaroni and cheese into the refrigerator. The dish was 80 degrees Fahrenheit $(^\circ \mathrm{F})$ when she put it in, and the inside of the refrigerator was $40^\circ \mathrm{F}$. The dish cooled quickly at first, then slowed as it approached the temperature inside the refrigerator. Which of the following graphs in the mT-plane could best represent the temperature, T, in degrees Fahrenheit, m minutes after Ruby put the dish in the refrigerator?





Linear and Exponential Growth

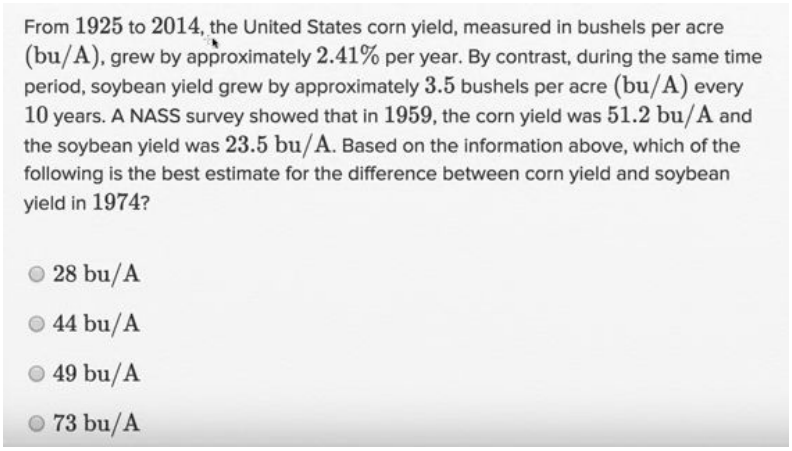
Linear and Exponential Growth-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q6-easier



The following equation represents the population growth of bacteria in a petri dish: $P(t) = 350\,(2)^t$, where $P(t)$ is the population after some amount of time, t, measured in hours. Which of the following best describes the relationship between the population of bacteria, $P(t)$, and the number of hours that have passed, t?

- The relationship is linear since the population has 350 more bacteria than the previous hour.
- The relationship is linear since the population has 2 more bacteria than the previous hour.
- The relationship is exponential since the population is 350 times larger than the previous hour.
- The relationship is exponential since the population is 2 times larger than the previous hour.

Linear and Exponential Growth-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q6-harder



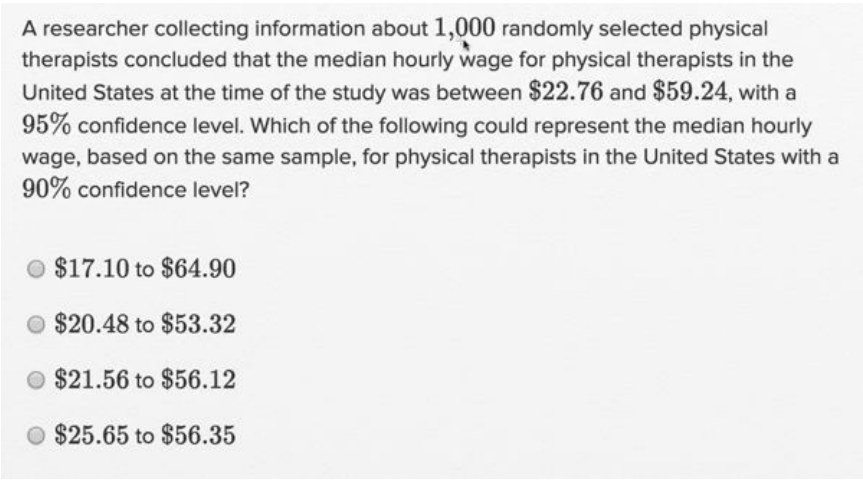
From 1925 to 2014, the United States corn yield, measured in bushels per acre (bu/A), grew by approximately 2.41% per year. By contrast, during the same time period, soybean yield grew by approximately 3.5 bushels per acre (bu/A) every 10 years. A NASS survey showed that in 1959, the corn yield was 51.2 bu/A and the soybean yield was 23.5 bu/A. Based on the information above, which of the following is the best estimate for the difference between corn yield and soybean yield in 1974?

- 28 bu/A
- 44 bu/A
- 49 bu/A
- 73 bu/A

Data Inferences

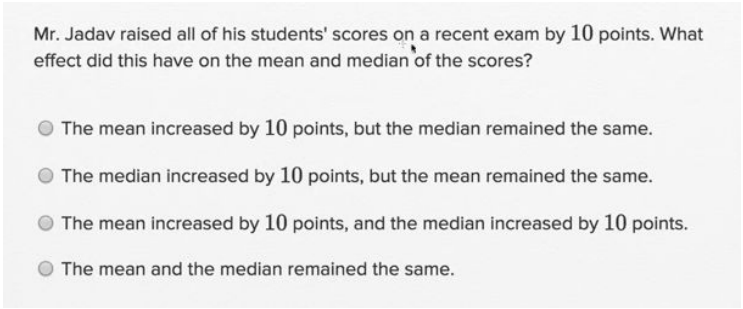
Data Inferences- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q8-easier

Data Inferences- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q8-harder

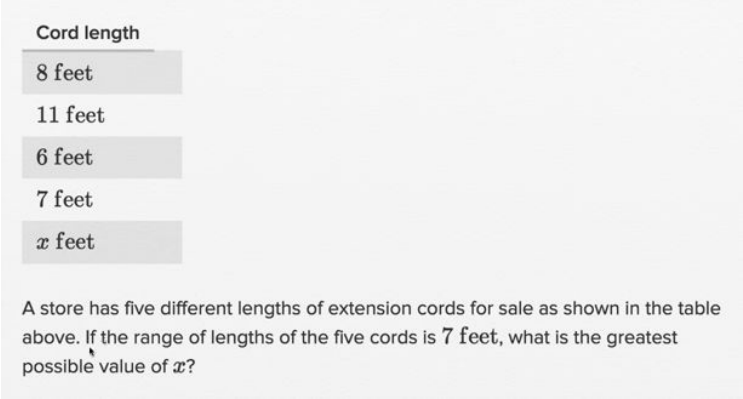


Center, Spread and Shape of Distributions

Center, Spread and Shape of Distributions- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q9-easier



Center, Spread and Shape of Distributions- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q9-harder



Data Collection and Conclusions

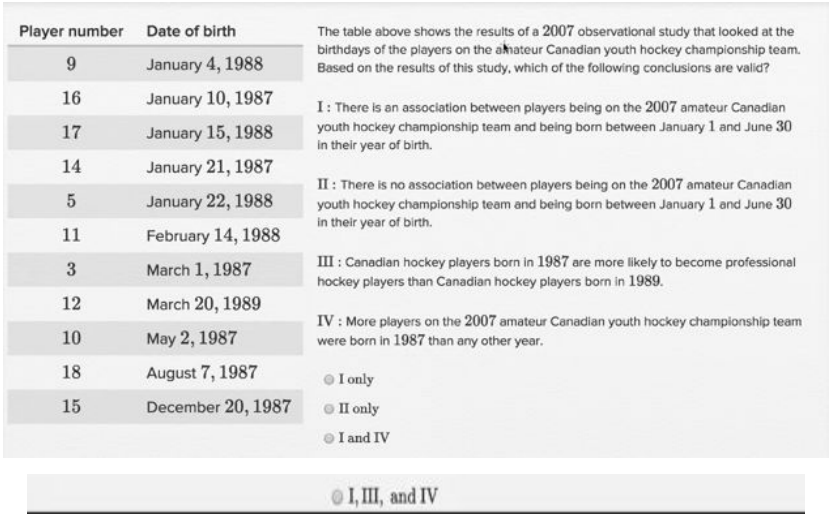
Data Collection and Conclusions- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q10-easier

The global temperature anomaly indicates how much warmer or colder the average global temperature is than normal during a particular time. A researcher conducting an observational study charted and analyzed atmospheric carbon dioxide (CO_2) levels and the global temperature anomaly in degrees celsius since the year 1960.

The researcher observed that the rate of increase of atmospheric CO_2 since 1960 (approximately 4.0% per decade) is comparable to the rate of increase in the global temperature anomaly during the same time period (approximately 3.9% per decade). Based on this data, which conclusion is valid?

- There is a correlation between the increase in atmospheric CO_2 levels since 1960 and the increase in the global temperature anomaly during the same time period.
- The increase in the global temperature anomaly since 1960 caused the increase in atmospheric CO_2 levels during the same time period.
- The increase in atmospheric CO_2 levels since 1960 caused the increase in the global temperature anomaly during the same time period.
- There is no correlation between the increase in atmospheric CO_2 levels since 1960 and the increase in the global temperature anomaly during the same time period.

Data Collection and Conclusions- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-problem-solving-data-analysis/v/sat-math-q10-harder



Player number	Date of birth
9	January 4, 1988
16	January 10, 1987
17	January 15, 1988
14	January 21, 1987
5	January 22, 1988
11	February 14, 1988
3	March 1, 1987
12	March 20, 1989
10	May 2, 1987
18	August 7, 1987
15	December 20, 1987

The table above shows the results of a 2007 observational study that looked at the birthdays of the players on the amateur Canadian youth hockey championship team. Based on the results of this study, which of the following conclusions are valid?

I : There is an association between players being on the 2007 amateur Canadian youth hockey championship team and being born between January 1 and June 30 in their year of birth.

II : There is no association between players being on the 2007 amateur Canadian youth hockey championship team and being born between January 1 and June 30 in their year of birth.

III : Canadian hockey players born in 1987 are more likely to become professional hockey players than Canadian hockey players born in 1989.

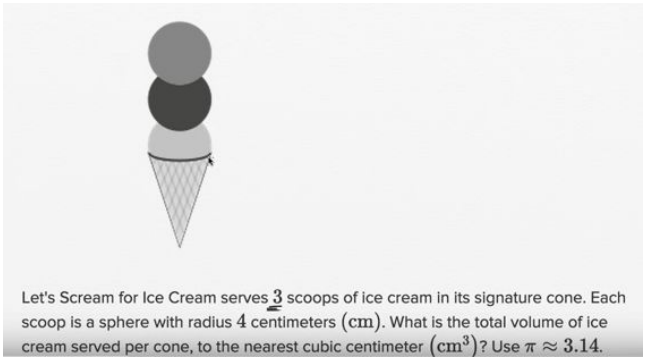
IV : More players on the 2007 amateur Canadian youth hockey championship team were born in 1987 than any other year.

- I only
- II only
- I and IV
- I, III, and IV

Additional Math Topics

Volume Word Problems

Volume Word Problems- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s1-easier



Let's Scream for Ice Cream serves 3 scoops of ice cream in its signature cone. Each scoop is a sphere with radius 4 centimeters (cm). What is the total volume of ice cream served per cone, to the nearest cubic centimeter (cm^3)? Use $\pi \approx 3.14$.

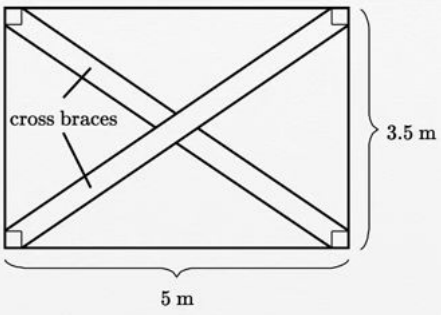
Volume Word Problems- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s1-harder

A tea infuser in the shape of a right rectangular pyramid is 7.9 centimeters (cm) tall, and has a base $3.0\ \text{cm}$ long and $1.5\ \text{cm}$ wide. To make the best tea, the infuser should be 80 percent filled with tea. What is the volume of tea, in cubic centimeters (cm^3), needed to fill the infuser to 80 percent of its capacity? Round to the nearest tenth.

- $4.7\ \text{cm}^3$
- $9.5\ \text{cm}^3$
- $11.9\ \text{cm}^3$
- $28.4\ \text{cm}^3$

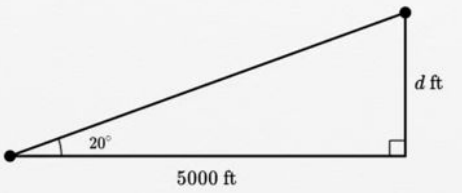
Right Triangle Word Problems

Right Triangle Word Problems- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s2-easier



A builder needs to add cross braces to a 3.5 meter (m) by $5\ \text{m}$ opening between supports in a building, as shown in the figure above. Which of the following is closest to the length of one of the cross braces?

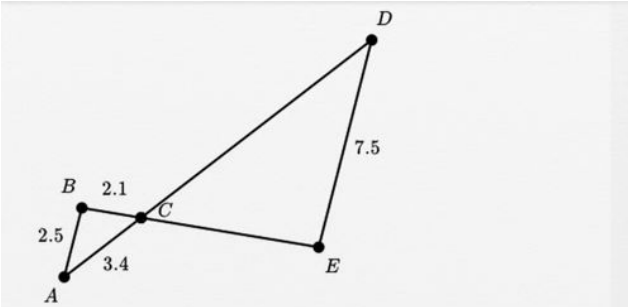
Right Triangle Word Problems- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s2-harder



The submarine captain starts ascending at a constant angle of inclination of $20°$ so that he can surface in $5{,}000$ feet. Changes in pressure are very important in submarine travel, and the pressure in kilopascals, P, is given by the equation $P \approx 2.990\,d + 101.3$. What is the current pressure, P, on the submarine at depth d? (Round your answer to the nearest kilopascal)

Congruence and Similarity

Congruence and Similarity- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s6-easier



Note: Figure not to scale.

In the diagram at left, line segment $\overline{AD}$ intersects $\overline{BE}$ and line segment $\overline{AB}$ is parallel to $\overline{DE}$. What is the length of side $\overline{CE}$?

Congruence and Similarity- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s6-harder

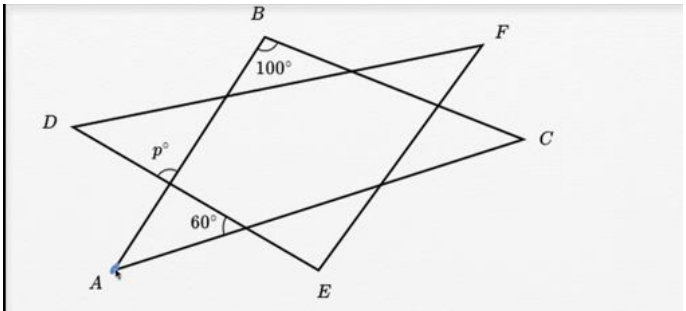
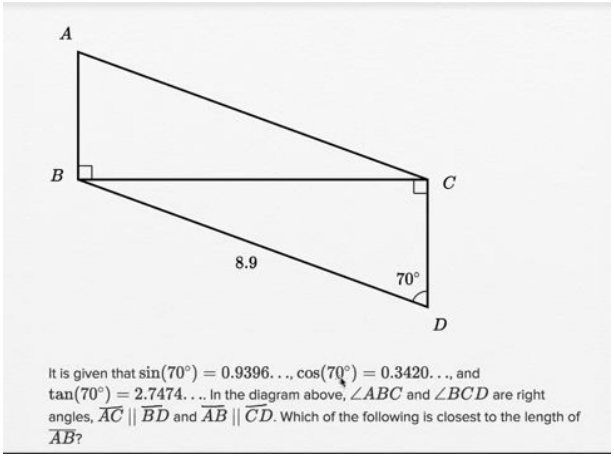


Image not drawn to scale.

In the figure above, triangle ABC is isosceles. That is, side AB is equal in length to side BC. Triangle DEF overlaps with triangle ABC. What is the value of p?

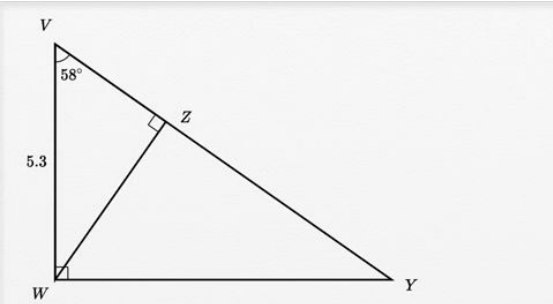
Right Triangle Geometry

Right Triangle Geometry- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s7-easier



It is given that $\sin(70°) = 0.9396...$, $\cos(70°) = 0.3420...$, and $\tan(70°) = 2.7474...$. In the diagram above, $\angle ABC$ and $\angle BCD$ are right angles, $\overline{AC} \parallel \overline{BD}$ and $\overline{AB} \parallel \overline{CD}$. Which of the following is closest to the length of $\overline{AB}$?

Right Triangle Geometry- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s7-harder

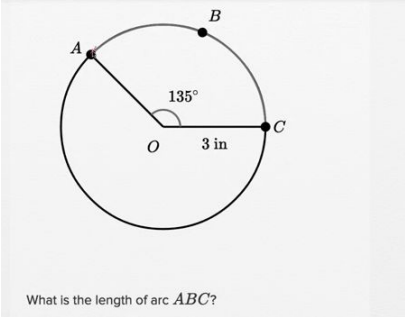


Note: figure not drawn to scale

It is given that $\sin(58°) = 0.8480\ldots$, $\cos(58°) = 0.5299\ldots$, and $\tan(58°) = 1.600\ldots$. In the figure above, $\angle VWY$ and $\angle WZV$ are right angles. What is the length of $\overline{VY}$ to the nearest integer?

Angles, Arc Length, and Trig Functions

Angles, Arc Length, and Trig Functions -Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s4-easier



What is the length of arc ABC?

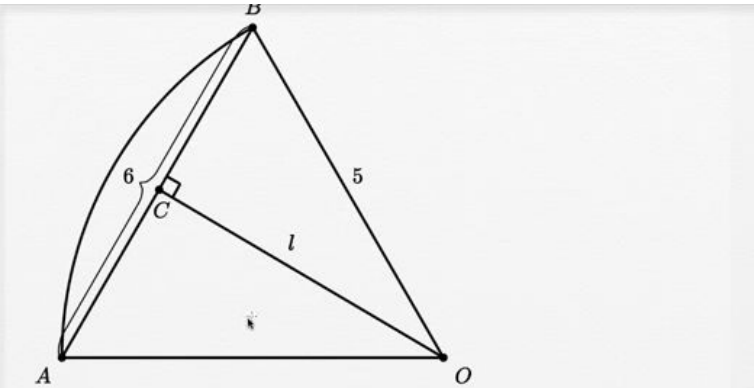
Angles, Arc Length, and Trig Functions -Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s4-harder

A circle has a circumference of 10π feet (ft). An arc, x, in this circle has a central angle of $260°$. What is the length of x?

- 5 ft
- $\frac{13\pi}{9}$ ft
- $\frac{65\pi}{9}$ ft
- 260 ft

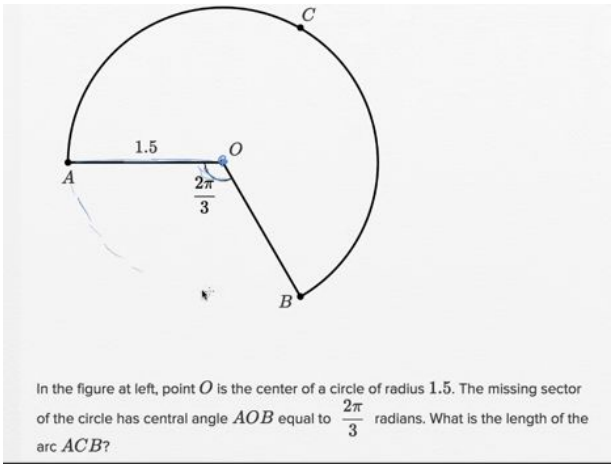
Circle Theorems

Circle Theorems-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s5-easier



The sector of a circle shown at left has center at point O. The radius of the circle is 5, and the length of chord AB is 6. Line segment CO is perpendicular to line segment AB. What is the length, l, of line segment CO?

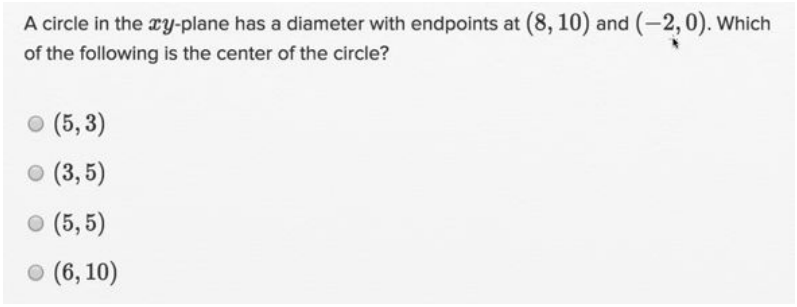
Circle Theorems-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s5-harder



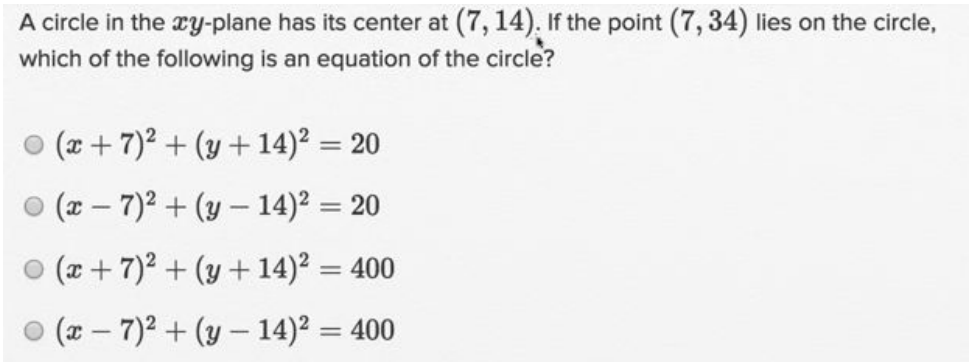
In the figure at left, point O is the center of a circle of radius 1.5. The missing sector of the circle has central angle AOB equal to $\frac{2\pi}{3}$ radians. What is the length of the arc ACB?

Circle Equations

Circle Equations-Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s8-easier

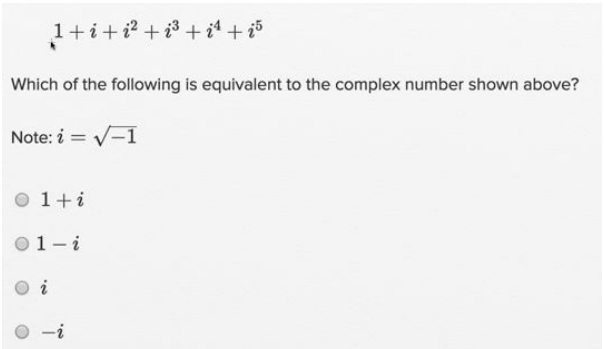


Circle Equations-Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s8-harder



Complex Numbers

Complex Numbers- Basic	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s3-easier



Complex Numbers- Harder	https://www.khanacademy.org/test-prep/new-sat/new-sat-math/new-sat-additional-topics-math/v/sat-math-s3-harder