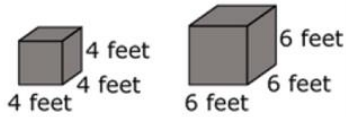


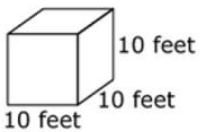
Grade 6: DOK 3

1958

Two shaded cubes are shown.



Ben states that the combined volume of these two shaded cubes is equal to the volume of this cube:



Part A: Select whether Ben's statement is true or false.

Part B: Drag numbers into the box to show the combined volume of the shaded cubes.

0
1
2
3
4
5
6
7
8
9

Delete

A. Ben's statement

True

False

B. Combined volume

cubic feet

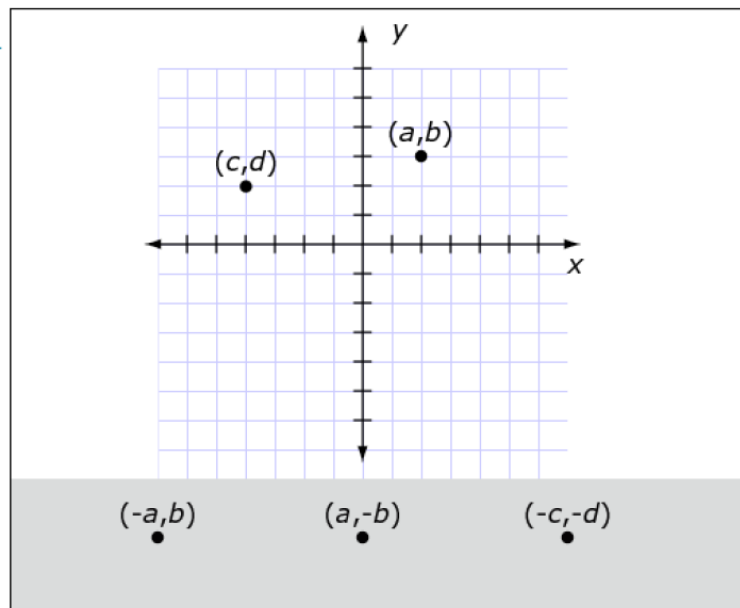
Grade 6 DOK 2

1859

Two ordered pairs are shown on a coordinate grid.

Drag each ordered pair to its correct location on the coordinate grid.

- $(-a, b)$
- $(a, -b)$
- $(-c, -d)$



Grade 6 DOK 3

1857



Look at the equation.

$$\frac{2}{3} \times \frac{\square}{\square} = n$$

Sarah claims that for any fraction multiplied by $\frac{2}{3}$, n will be less than $\frac{2}{3}$.

To convince Sarah that this statement is only sometimes true:

Part A: Drag one number into each box so the product, n , is less than $\frac{2}{3}$.

Part B: Drag one number into each box so the product, n , is **not** less than $\frac{2}{3}$.

1
2
3
4
5
6
7
8
9

Delete

Part A: Product n is less than $\frac{2}{3}$

$$\frac{2}{3} \times \frac{\square}{\square} = n$$

Part B: Product n is not less than $\frac{2}{3}$

$$\frac{2}{3} \times \frac{\square}{\square} = n$$

Grade 7 DOK 2

1879



A representative sample of 50 students from a high school is surveyed. Each student is asked what science class he or she is taking.

This table shows the responses.

Science Class	Number of Students
Physics	6
Chemistry	10
Biology	18
Earth Science	4
Health Science	12

Select **all** of the statements that are valid based on the survey results.

- About 20% of students at the high school are taking Chemistry.
- About twice as many students are taking Health Science than are taking Physics.
- For every 150 students we could predict that at least 18 of the students are taking Physics.
- For every 25 students we could predict that at least 4 of the students are taking Earth Science.

Grade 7 DOK 3

1889



In the given equation, a , b , and c are nonzero rational numbers.

$$a \cdot b = c$$

Given this equation, drag one number into each box to complete four true equations.

a
 b
 c
 $-a$
 $-b$
 $-c$

Delete

$$-a \cdot \square = c$$

$$\square \cdot \square = -c$$

$$\frac{\square}{-b} = a$$

$$\frac{\square}{\square} = -a$$

Grade 7 DOK 2

1877



Alex claims that when $\frac{1}{4}$ is divided by a fraction, the result will be greater than $\frac{1}{4}$.

To convince Alex that this statement is only sometimes true:

Part A: Drag one digit into each box to create an expression that is greater than $\frac{1}{4}$.

Part B: Drag one digit into each box to create an expression that is **not** greater than $\frac{1}{4}$.

1
2
3
4
5
6
7
8
9

Delete

Part A: Expression greater than $\frac{1}{4}$

$$\frac{1}{4} \div \frac{\square}{\square}$$

Part B: Expression not greater than $\frac{1}{4}$

$$\frac{1}{4} \div \frac{\square}{\square}$$

Grade 7 DOK 1

1837



Enter the value of p so the expression $\frac{5}{6} - \frac{1}{3}n$ is equivalent to $p(5 - 2n)$.

A digital calculator interface with a grid of buttons. The top row contains navigation buttons: left arrow, right arrow, undo, redo, and clear. The second row contains numeric buttons 1, 2, 3 and operation buttons +, -, *, /. The third row contains numeric buttons 4, 5, 6 and comparison buttons <, ≤, =, ≥, >. The fourth row contains numeric buttons 7, 8, 9 and mathematical symbols: fraction, square, parentheses, absolute value, and pi. The fifth row contains numeric buttons 0, ., and -.

Grade 7 DOK 2

1844



A store is having a sale. Each customer receives either a 15% discount on purchases under \$100 or a 20% discount on purchases of \$100 or more. Kelly is purchasing some clothes for \$96.60 before the discount. She decides to buy the fewest packs of gum that will increase her purchase to over \$100. The price of each pack of gum is \$0.79.

After the discount, how much less will Kelly pay by purchasing the clothes and the gum instead of purchasing only the clothes? (Assume there is no sales tax to consider.)

- (A) \$1.05
- (B) \$1.67
- (C) \$3.69
- (D) \$3.87

Grade 8 DOK 1

1801



For each number, indicate whether it is rational or irrational.

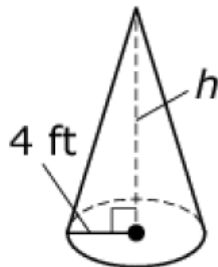
	Rational	Irrational
$\frac{4}{7}$	<input type="checkbox"/>	<input type="checkbox"/>
$\sqrt{30}$	<input type="checkbox"/>	<input type="checkbox"/>
$\frac{21}{\sqrt{4}}$	<input type="checkbox"/>	<input type="checkbox"/>
π	<input type="checkbox"/>	<input type="checkbox"/>
-27	<input type="checkbox"/>	<input type="checkbox"/>

Grade 8 DOK 2

1820



A cone with radius 4 feet is shown. Its approximate volume is 165 cubic feet.



Enter the height of the cone, in feet. Round your answer to the nearest hundredth.

Grade 8 DOK 2

1871



Segment FG begins at point $F(-2, 4)$ and ends at point $G(-2, -3)$. The segment is translated by $\langle x - 3, y + 2 \rangle$ and then reflected across the y -axis to form segment $F'G'$.

How many units long is segment $F'G'$?

- (A) 0
- (B) 2
- (C) 3
- (D) 7

Grade 8 DOK 3

1845



A sequence of transformations is applied to a polygon. Select **all** statements which indicate a sequence of transformations where the resulting polygon has an area greater than the original polygon.

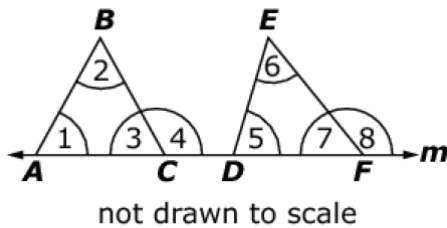
- Reflect over the x -axis, dilate about the origin by a scale factor of $\frac{1}{2}$, translate up 5 units.
- Rotate 90° counterclockwise around the origin, dilate about the origin by a scale factor of $\frac{3}{2}$.
- Dilate about the origin by a scale factor of $\frac{2}{3}$, rotate 180° clockwise around the origin, translate down 2 units.
- Dilate about the origin by a scale factor of 2, reflect over the y -axis, dilate about the origin by a scale factor of $\frac{2}{3}$.

Grade 8 DOK 2

1843



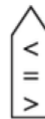
The base of triangle ABC and the base of triangle DEF lie on line m , as shown in the diagram.



The measure of $\angle 4$ is less than the measure of $\angle 8$.

For each comparison, select the symbol ($<$, $>$, $=$) that makes the relationship between the first quantity and the second quantity true.

First Quantity	Comparison	Second Quantity
$m\angle 3$	<div style="border: 1px solid black; padding: 5px; width: 30px; margin: 0 auto;"> $<$ $=$ $>$ </div>	$m\angle 7$
$m\angle 1 + m\angle 2$	<div style="border: 1px solid black; padding: 5px; width: 30px; margin: 0 auto;"> $<$ $=$ $>$ </div>	$m\angle 5 + m\angle 6$

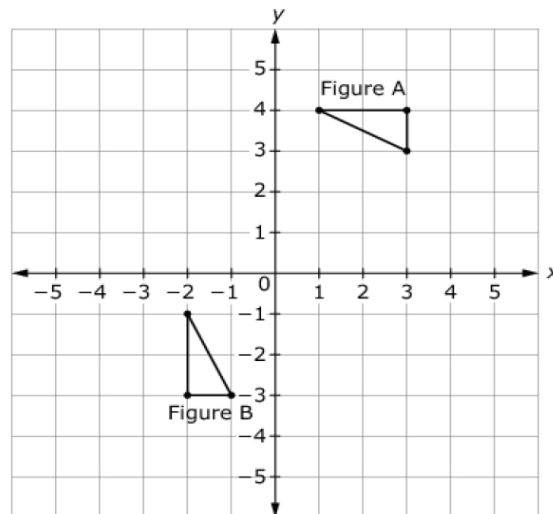


Grade 8 DOK 3

1841



Two figures are shown on the coordinate grid.



Show that Figure A and Figure B are congruent by describing a sequence of basic transformations that maps Figure A onto Figure B. In your response, be sure to identify the transformations in the order they are performed.

Grade 8 DOK 2

1867

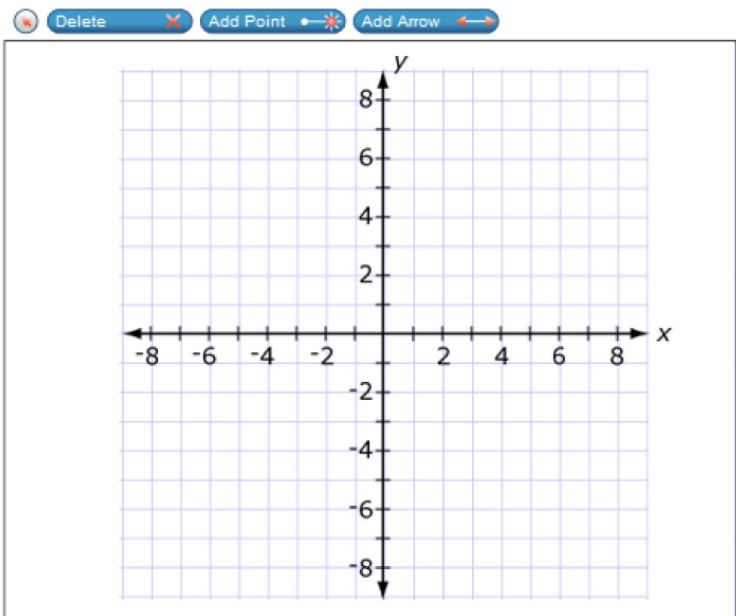


John and Kim wrote down two different functions that have the same rate of change.

John's function is represented by the table shown.

x	y
-1	-5
1	-1
3	3

Use the Add Arrow tool to graph a function that could be Kim's function.



Grade 11 DOK 1

1915



Determine whether each expression is equivalent to $(x^3 + 8)$. Select Yes or No for each expression.

	Yes	No
$(x + 8)^3$	<input type="checkbox"/>	<input type="checkbox"/>
$(x - 2)(x^2 + 2x + 4)$	<input type="checkbox"/>	<input type="checkbox"/>
$(x + 2)(x^2 - 2x + 4)$	<input type="checkbox"/>	<input type="checkbox"/>

Grade 11 DOK 2

1932



Click on **two** numbers whose product is **irrational**.

Numbers	-5	$\frac{1}{3}$	$\frac{2}{3}$	$3\sqrt{2}$	$\sqrt{8}$
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Grade 11 DOK 2

1899



Enter the value of x such that $3^{\frac{4}{5}} \cdot 3^{\frac{3}{x}} = \sqrt[5]{3^7}$ is true.

←→↶↷✖

1	2	3	+	-	*	÷					
4	5	6	<	≤	=	≥	>				
7	8	9	$\frac{\square}{\square}$	\square^\square	\square_\square	()		$\sqrt{\square}$	$\sqrt[\square]{\square}$	π	i
0	.	-	sin	cos	tan	arcsin	arccos	arctan			

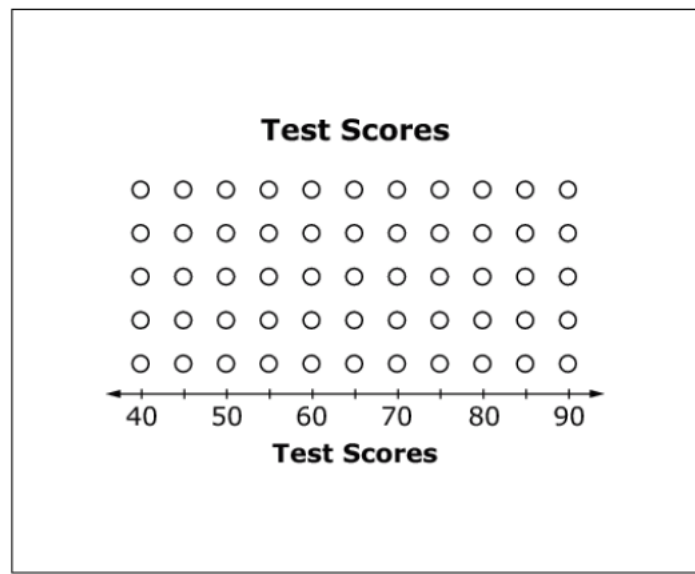
Grade 11 DOK 2

1951



Click above the numbers to create a dot plot for the given test scores.

90, 45, 85, 70, 85, 50, 75, 85, 65, 75, 60, 85, 80, 65, 80

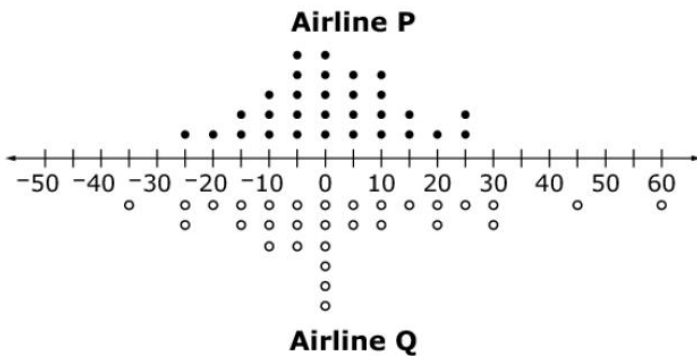


Grade 11 DOK 3

2055



The dot plots below compare the number of minutes 30 flights made by two airlines arrived before or after their scheduled arrival times.



- Negative numbers represent the minutes the flight arrived before its scheduled time.
- Positive numbers represent the minutes the flight arrived after its scheduled time.
- Zero indicates the flight arrived at its scheduled time.

Assuming you want to arrive as close to the scheduled time as possible, from which airline should you buy your ticket? Use the ideas of center and spread to justify your choice.

Grade 11 DOK 2

1922



Jim can paint a house in 12 hours. Alex can paint the same house in 8 hours.

Enter an equation that can be used to find the time in hours, t , it would take Jim and Alex to paint the house together.

← → ↶ ↷ ✖

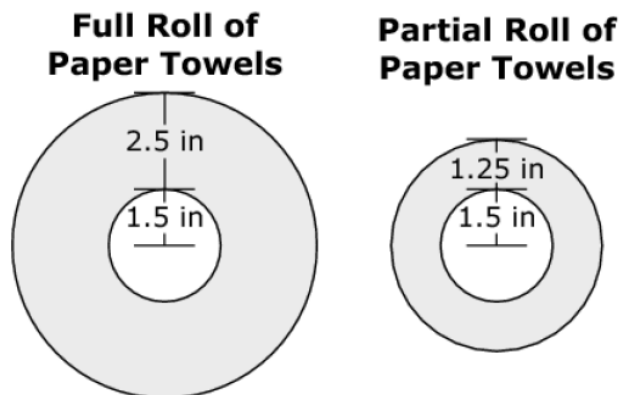
1	2	3	t
4	5	6	+ - * ÷
7	8	9	< ≤ = ≥ >
0	.	-	$\frac{\square}{\square}$ \square^\square \square_\square $()$ $ $ $\sqrt{\square}$ $\sqrt[\square]{\square}$ π i
sin cos tan arcsin arccos arctan			

Grade 11 DOK 3

2032



The diagram shows the end view of a roll of paper towels when it is full and the end view of the roll after some of the paper towels have been used.



When the full roll of paper towels is unrolled, it has a length of 528 inches of paper towels of uniform width and thickness. Enter the length, in inches, of the paper towels remaining on the partial roll.

Grade 11 DOK 2

1927



At a local fair, the price of admission includes the opportunity for a person to spin a wheel for free ride tickets.

- Each spin of the wheel is a random event.
- The result from each spin of the wheel is independent of the results of previous spins.
- Each spin of the wheel awards tickets according to the probabilities shown below.

Spin the Wheel

1 ticket	35%
2 tickets	25%
3 tickets	20%
5 tickets	15%
10 tickets	5%

Let X be the number of tickets a person wins based on 2 spins. There are 13 possible values for X .

Some values of X are more common than others. For example, winning only 2 tickets in 2 spins is a somewhat common occurrence with probability 0.1225. It means the person wins 1 ticket on the first spin and 1 ticket on the second spin ($0.35 \cdot 0.35$). A list of the possible values of X and the corresponding probabilities for most values of X is shown below.

Fill in the three missing probability values in the table.

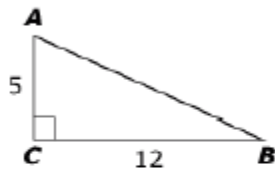
X	Probability
2	0.1225
3	0.1750
4	<input type="text"/>
5	0.1000
6	0.1450
7	0.0750
8	0.0600
10	<input type="text"/>
11	0.0350
12	0.0250
13	<input type="text"/>
15	0.0150
20	0.0025

Grade 11 DOK 1

1936



Consider this right triangle.



Determine if each expression is equivalent to the length of \overline{AC} . Select Yes or No for each expression.

	Yes	No
$13\sin(B)$	<input type="checkbox"/>	<input type="checkbox"/>
$13\cos(A)$	<input type="checkbox"/>	<input type="checkbox"/>
$12\tan(A)$	<input type="checkbox"/>	<input type="checkbox"/>
$12\tan(B)$	<input type="checkbox"/>	<input type="checkbox"/>

Grade 11 DOK 2

2008



Samantha invented a new outdoor game. The game requires attaching a rope between the tops of two poles of different heights. Read the instructions Samantha created. Use all the given information to determine the maximum allowable distance between the base of pole A and the base of pole B.

Game Instructions

Materials needed: Pole A, Pole B, 10 feet of rope

Setup:

- Place pole A perpendicular to the ground so that its height is 3 feet.
- Place pole B perpendicular to the ground so that its height is 7 feet.
- The length of the rope must extend at least 6 inches past the top of each pole for proper assembly.
- Attach the rope to the top of the two poles.

Enter the **maximum** distance between the base of pole A and the base of pole B to the nearest whole foot.