

OAKS Test Review

2009 ODE Standards

High School

Special Thanks to Benson High School - for getting the ball rolling!

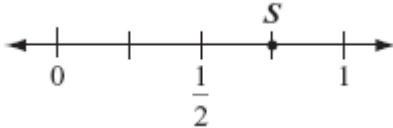
OAKS Math Review - Test Taking Tips

BEFORE THE TEST

- Develop a positive attitude. Tell yourself, "I will do my best on this test."
- Get a good night's sleep the night before the test.
- Get up early enough to avoid hurrying to get ready for school.
- Eat a good breakfast (and lunch, if your test is in the afternoon).

DURING THE TEST

- Stay calm.
- Listen carefully to directions.
- Read each test question and all the answer choices carefully.
- Eliminate any obvious wrong answers.
- Solve the problem using paper and pencil, a calculator or by using manipulatives. See if you answer is similar to one of the choices given.
- Use the formula sheet.
- Pace yourself. If you come to a difficult question, it may be better to skip it and go on. Then come back and focus on the difficult questions one at a time.
- This is not a timed test. If you need more time to finish the test, notify your teacher.
- Remember the test questions are not necessarily arranged by difficulty. If you get to a question you think is too hard, that doesn't mean the rest of the test questions will also be too hard.
- The teachers who write the test questions use "commonly made mistakes" to identify good distractors, so finding an answer like yours is not a guarantee that it is the correct answer.

<p>STANDARD - Algebra H.1A.1 Compare, order, and locate real numbers on a number line.</p> <p>Terms: Real numbers Number line Rational numbers Irrational numbers</p>	<p>Sample problem Which number has the greatest value?</p> <p>a) 2.5^4 b) 5,000 c) 4.5×10^3 d) 100^2</p>
	<p>Sample problem Which number is between 2.4 and $7\frac{1}{3}$?</p> <p>a) 2.35 b) $\sqrt{5}$ c) 7.45 d) $7\frac{1}{4}$</p>
	<p>Sample problem</p>  <p>What is the value of point S on the number line above?</p> <p>a) $\frac{2}{3}$ b) $\frac{1}{4}$ c) $\frac{3}{4}$ d) $\frac{4}{7}$</p>

<p>STANDARD – Algebra</p> <p>H.1A.2 Evaluate, compute with, and determine equivalent numeric and algebraic expressions with real numbers and variables that may also include absolute value, integer, exponents, square roots, pi, and/or scientific notation.</p> <p>Terms: Evaluate Equivalent expressions Absolute value Integer exponents Square roots Pi Scientific notation</p>	<p>Sample problem</p> <p>If $a = 6$ and $b = -10$, which of the following expressions gives you the greatest value?</p> <p>A. $a - \frac{b}{a}$</p> <p>B. $a + (a - b)$</p> <p>C. $a^2 + (a - b)$</p> <p>D. $a + a - b^2$</p>
	<p>Sample problem</p> <p>Evaluate $4 - n + 10$ for $n = 8$.</p> <p>a) 14 b) 6 c) 22 d) -2</p>
	<p>Sample problem</p> <p>Simplify the expression $2^4 - \sqrt{16} - 3(4)$</p> <p>a) 0 b) 4 c) -8 d) -12</p>

<p>STANDARD – Algebra H.1A.3 Express square roots in equivalent radical form and their decimal approximations when appropriate.</p> <p>Terms: Square root Radical sign Simplify Simplest radical form</p>	<p>Sample problem</p> <p>Write $\sqrt{50}$ in the simplest radical form.</p> <p>a) $10\sqrt{5}$ b) $5\sqrt{10}$ c) $5\sqrt{2}$ d) $2\sqrt{25}$</p>
	<p>Sample problem</p> <p>Simplify $\sqrt{36a^2b^2}$.</p> <p>a) $18ab$ b) $6a^2b^2$ c) $6ab$ d) $18a^2b^2$</p>
	<p>Sample problem</p> <p>If the area of a square is 12, what is the length of the side?</p> <p>a) $2\sqrt{3}$ b) 6 c) $\sqrt{6}$ d) 3</p>

<p>STANDARD – Algebra</p> <p>H.1A.4 Develop, identify, and/or justify equivalent algebraic expressions, equations, and inequalities using the properties of exponents, equality and inequality, as well as the commutative, associative, inverse, identity, and distributive properties.</p> <p>Terms: Equivalent expressions/equations Inequalities Properties of exponents/equality/inequality Commutative property Associative property Inverse property Identity property Distributive property</p>	<p>Sample problem</p> <p>Simplify: $-13x + (-7x) + 5x$</p> <p>A. $-25x$ B. $-15x$ C. $15x$ D. $25x$</p>
	<p>Sample problem</p> <p>If $a < b$, then which of the following is NOT true?</p> <p>a) $a - c < b - c$ b) $a + c < b + c$ c) $a < c$, for $b < c$ d) $a - c > b - c$</p>
	<p>Sample problem</p> <p>Which of the following is NOT equivalent to $\frac{a^6 b^{12}}{a^2 b^4}$?</p> <p>a) $\frac{a^5 b^{10}}{a b^2}$ b) $\frac{a^{18} b^8}{a^{14}}$ c) $a^4 b^8$ d) $a^3 b^3$</p>

<p>STANDARD – Algebra H.1A.5 Factor quadratic expressions limited to factoring common monomial terms, perfect-square trinomials, differences of squares, and quadratics of the form $x^2 + bx + c$ that factor over the integers.</p> <p>Terms Factor Greatest common factor Difference of squares</p>	<p>Sample problem</p> <p>Which is the factored form of $8x^3 + 12x^2 + 40x$?</p> <p>a) $4(2x^3 + 3x^2 + 10x)$ b) $4x(2x^2 + 3x + 10)$ c) $2(4x^3 + 6x^2 + 20x)$ d) $2x(2x^2 + 3x + 10)$</p>
	<p>Sample problem</p> <p>Factor $x^2 + 8x + 16$.</p> <p>a) $(x + 4)(x - 4)$ b) $(x + 2)(x + 8)$ c) $(x + 4)(x + 4)$ d) $(x + 8)(x + 8)$</p>
	<p>Sample problem</p> <p>Factor $x^2 - 16$.</p> <p>a) $(x + 4)(x - 4)$ b) $(x - 2)(x + 8)$ c) $(x + 4)(x + 4)$ d) $(x + 8)(x - 8)$</p>

STANDARD – Algebra

H.2A.1 Identify, construct, extend, and analyze linear patterns and functional relationships that are expressed contextually, numerically, algebraically, graphically, in tables, or using geometric figures.

Terms

- numerically
- algebraically
- extend
- linear pattern

Sample problem

Find the n^{th} term of the pattern in the table:

Term #	0	1	2	3	n^{th}
Term Value	2	6	10	14	

- a) $4n + 2$
- b) $2n + 4$
- c) $n + 4$
- d) $4n - 2$

Sample problem

Examine this tile pattern and answer the questions below.



Figure 1



Figure 2



Figure 3

Which equation represents the pattern?

- a) $y = 3x + 2$
- b) $y = 2x + 3$
- c) $y = 7x + 3$
- d) $y = 2x + 1$

Sample problem

Tammy measured the circumference of some cottonwoods that her family had planted on their farm over the last 5 years. Her data is recorded below.

Years since planting	3	4	5
Circumference in inches	10	13	16

Which rule represents the data in the table?

- a) $y = 3x + 10$
- b) $y = 3x + 1$
- c) $y = 3x - 1$
- d) $y = 3x$

STANDARD – Algebra

H.2A.2 Given a rule, a context, two points, a table of values, a graph, or a linear equation in either slope intercept or standard form, identify the slope of the line, determine the x and/or y intercept(s), and interpret the meaning of each.

Terms

Slope

x- and y-intercept

slope-intercept form: $y=mx+b$

standard form: $Ax+By=C$

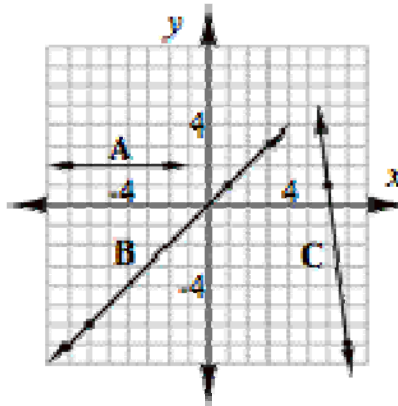
Sample problem

Find the slope of the line that contains the points $(2, -5)$ and $(-1, 7)$.

- a) 4
- b) -4
- c) $-\frac{1}{4}$
- d) $\frac{1}{4}$

Sample problem

Find the slope for each line.



- a) A is undefined, B = 1, C = -8
- b) A is undefined, B = -1, C = -8
- c) A = 0, B = 1, C = -8
- d) A = 0, B = 1, C = 8

Sample problem

Find the x- and y-intercept for the line with the equation $2x - 3y = 8$.

- a) $(-4, 0), (0, \frac{8}{3})$
- b) $(\frac{8}{3}, 0), (0, -4)$
- c) $(4, 0), (0, -\frac{8}{3})$
- d) $(-\frac{8}{3}, 0), (0, 4)$

STANDARD – Algebra

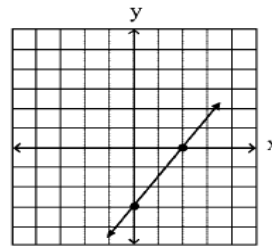
H.2.A.3 Determine the equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, determine an equation of a new line, parallel or perpendicular to a given line, through a given point.

Terms

- Equation of a line
- Parallel
- Perpendicular

Sample problem

Which equation does NOT represent the line graphed?

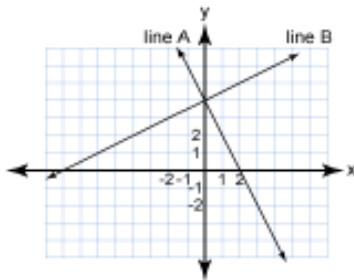


- A. $3y = 2x - 6$
- B. $2y - 3x = -6$
- C. $y = \frac{3}{2}x - 3$
- D. $2y = 3x - 6$

Sample problem

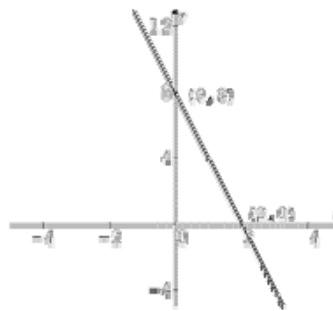
Line A is the graph for the equation $y = -2x + 4$.
Line B is perpendicular to line A.

What is the equation of the graph of line B?



- A. $y = -2x + 4$
- B. $y = 2x + 4$
- C. $y = \frac{1}{2}x + 4$
- D. $y = -\frac{1}{2}x + 4$

Sample problem



Find the equation of a line parallel to the one at right that passes through the point $(-2, 5)$.

- a) $y = 4x - 3$
- b) $y = -4x + 5$
- c) $y = 4x + 5$
- d) $y = -4x - 3$

Sample problem

Line K is parallel to Line L and perpendicular to Line M. Line K passes through the origin and intersects Line M at the point $(4, 2)$. Line L has a y -intercept of 4. Which statement below is false?

- a. Line K has the same slope as Line L.
- b. There is not enough information to determine the slope of Line L.
- c. Line M has a slope of -2 .
- d. Line L is perpendicular to Line M

STANDARD – Algebra

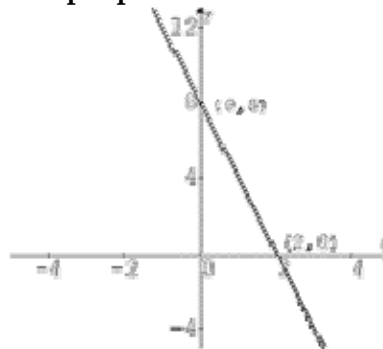
H.2A.4 Fluently convert among representations of linear relationships given in the form of a graph of a line, a table of values, or an equation of a line in slope-intercept and standard form.

Terms

Slope-intercept form: $y=mx+b$

Standard Form: $Ax+By=C$

Sample problem



What is the equation, in slope-intercept form, for the line above?

- a) $y = 4x + 8$ c) $y = -\frac{1}{4}x + 8$
b) $y = -4x + 8$ d) $y = -4x + 2$

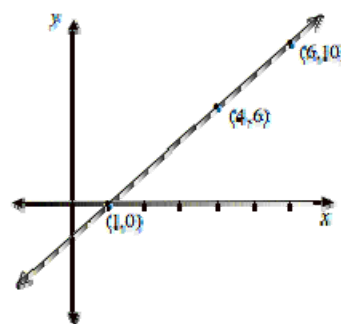
Sample problem

Use the table below to select the matching rule.

x	2	0	1	-1	$\frac{1}{3}$	1.5
y	7	1	4	-2	2	5.5

- a. $y = 3x - 1$ b. $y = \frac{1}{3}x + 1$
c. $y = x - 1$ d. $y = 3x + 1$

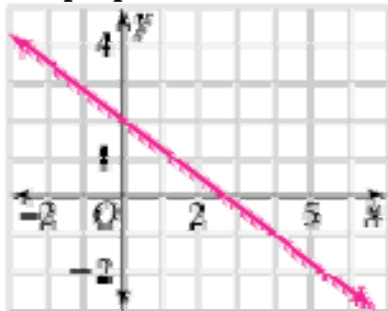
Sample problem



Write the equation for the line in standard form.

- a) $x - y = 2$ c) $x - 2y = 2$
b) $2x - y = 2$ d) $2x + y = 2$

<p>STANDARD – Algebra H.2A.5 Given a linear function, interpret and analyze the relationship between the independent and dependent variables. Solve for x given f(x) or solve for f(x) given x.</p> <p>Terms Independent variable Dependent variable</p>	<p>Sample problem</p> <p>Solve $f(x) = 4x - 5$ for $x = 3$.</p> <p>a) 38 b) 17 c) 7 d) -17</p>
	<p>Sample problem</p> <p>Given $f(x) = \frac{1}{2}x + 6$, solve for x when $f(x) = 4$.</p> <p>a) 8 b) 2 c) -1 d) -4</p>
	<p>Sample problem</p> <p>When paying a dinner bill, the tip is determined by finding the product of a certain percent and the dinner bill. Which of the following is true in this situation?</p> <p>a) The dependent variable is the dinner bill amount and the independent variable is the tip amount.</p> <p>b) The dependent variable is the tip amount and the independent variable is the dinner bill amount.</p> <p>c) Neither the dinner bill amount nor the tip amount is the dependent variable.</p> <p>d) Neither the dinner bill amount nor the tip amount is the independent variable.</p>

<p>STANDARD – Algebra H.2A.6 Analyze how changing the parameters transforms the graph of $f(x) = mx + b$.</p> <p>Terms transform</p>	<p>Sample problem Given the graph of the line $f(x) = 2x + 5$, what happens to the line if 5 is changed to 1?</p> <p>a) It moves down 4 units. b) It moves right 4 units. c) It moves left 4 units. d) It moves up 4 units.</p>
	<p>Sample problem Given the graph of the line $f(x) = 2x - 4$, what happens to the line if 2 is changed to $\frac{1}{2}$?</p> <p>a) It is steeper. b) It is not as steep. c) The y values decrease as the x values increase. d) It is $\frac{1}{2}$ as long.</p>
	<p>Sample problem</p>  <p>If the line on the graph is shifted vertically 4 units, what would the equation of the new line be?</p> <p>a) $y = -\frac{3}{4}x + 2$ b) $y = -\frac{3}{4}x + 6$ c) $y = -\frac{3}{4}x - 2$ d) $y = -\frac{3}{4}x$</p>

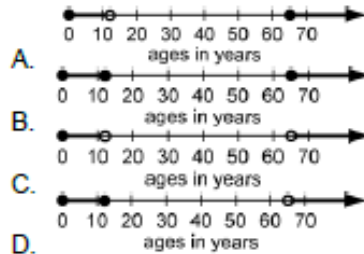
STANDARD – Algebra

H.2A.7 Write, use, and solve linear equations and inequalities using graphical and symbolic methods with one or two variables. Represent solutions on a coordinate graph or number line.

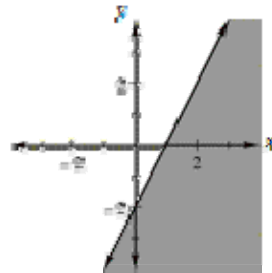
Sample problem

You can receive a reduced ticket price at the local movie theater if you are 65 or older, or if you are younger than 12.

Which graph displays this information?



Sample problem



The graph shows the solution to which of these inequalities?

- a) $y > 2x - 2$
- b) $y \geq 2x - 2$
- c) $y < 2x - 2$
- d) $y \leq 2x - 2$

Sample problem

Write an inequality to represent that the amount of candy bars that John sold is at least twice as much as the number of candy bars that Miranda sold. Let J = # of bars John sold and M = # of bars Miranda sold.

- a) $J > 2M$
- b) $J < 2M$
- c) $J \geq 2M$
- d) $J \leq 2M$

STANDARD – Algebra

H.2A.8 Solve systems of two linear equations graphically and algebraically, and solve systems of two linear inequalities graphically.

Terms

System of linear equations
System of linear inequalities

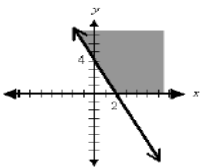
Sample problem

Solve the system of equations:

$$\begin{aligned} a + b &= -7 \\ 4a + 2b &= 22 \end{aligned}$$

- A. $a = -7.5$
 $b = -14.5$
- B. $a = 18$
 $b = -25$
- C. $a = 2$
 $b = -9$
- D. $a = 22$
 $b = -7$

Sample problem



The solution to a set of inequalities is graphed. Which of the following could be the set of inequalities?

- A. $2x + y \leq 4$
 $y \geq 0$
- B. $2x + y \geq 4$
 $y \geq 0$
- C. $2x + y \leq 4$
 $y \leq 0$
- D. $2x + y \geq 4$
 $y \leq 0$

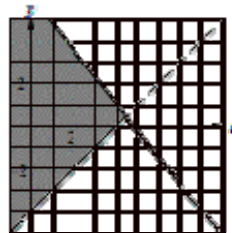
Sample problem

Edith is using substitution to solve the system of equations below. What should the first step be? Choose the correct first step from the choices below.

$$\begin{aligned} y &= 3x \\ -2x + 8y &= -2 \end{aligned}$$

- a. ~~$-2x + 0(3x) = -2$~~
- b. ~~$3(-2x + 8y) = -2$~~
- c. ~~$-2(3x) + 8y = -2$~~
- d. ~~$3(-2x + 8y) = -2$~~

Sample problem



Write a system of two linear inequalities for the solution showed on the graph.

- a) $y > -\frac{5}{4}x + 6$
 $y \leq x - 4$
- b) $y > -\frac{5}{4}x + 6$
 $y < x - 4$
- c) $y \leq -\frac{5}{4}x + 6$
 $y \geq x - 4$
- d) $y < -\frac{5}{4}x + 6$
 $y > x - 4$

STANDARD – Algebra

H.3A.1 Given a quadratic or exponential function, identify or determine a corresponding table or graph.

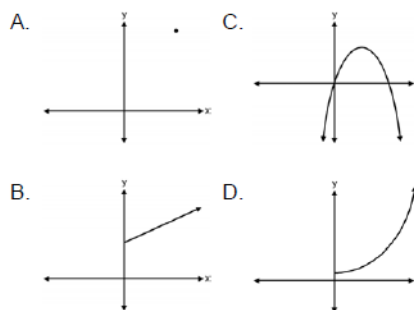
Terms

Quadratic function

Exponential function

Sample problem

Which graph models the function $f(x) = -x^2 + 4x$?

**Sample problem**

Which formula best describes the table of values shown?

x	y
-3	81
-2	36
-1	9
0	0
1	9
2	36
3	81

A. $y = -27x$

B. $y = 27x$

C. $y = (3x)^2$

D. $y = 3x^2$

Sample problem

The number of bacteria in a culture is decreasing exponentially with time, as shown in the table at right. Which equation represents the number of bacteria (y) present at any time (t)?

Day	Bacteria
0	1000
1	250
2	62.5

A. $y = \left(\frac{1}{4}\right)^t$

B. $y = 1000\left(\frac{1}{4}\right)^t$

C. $y = 1000 - \left(\frac{1}{4}\right)^t$

D. $y = 250\left(\frac{1}{4}\right)^t$

STANDARD – Algebra

H.3A.2 Given a table or graph that represents a quadratic or exponential function, extend the pattern to make predictions.

Sample problem

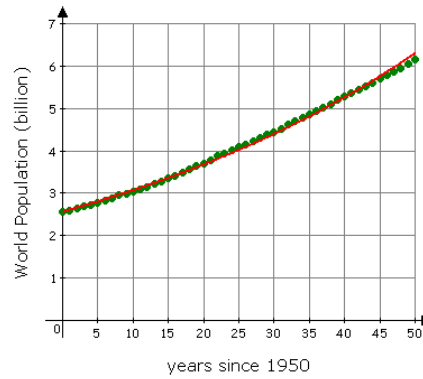
Using the table below, what is the value of y for $x = 10$?

x	y
- 2	7
- 1	4
0	3
1	4
2	7

- a) $y = 37$
- b) $y = 33$
- c) $y = 100$
- d) $y = 103$

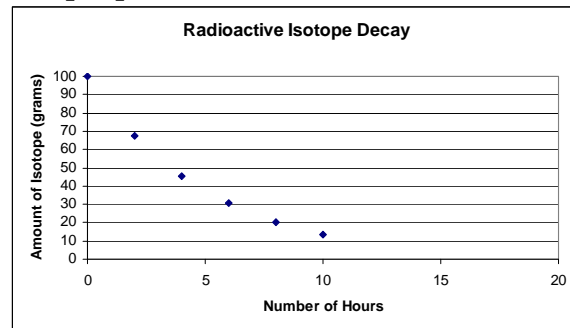
Sample problem

Based on the graph, about when did the world population double the world population in 1960?



- a) 1985
- b) 1990
- c) 1998
- d) 2010

Sample problem



Approximately how many grams of the radioactive isotope will be left after 15 hours?

- a) 0 grams
- b) 10 grams
- c) 15 grams
- d) 20 grams

STANDARD – Algebra

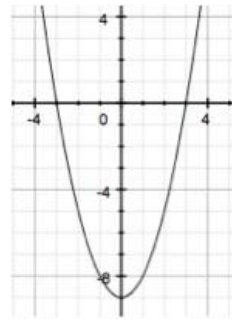
H.3A.3 Compare the characteristics of and distinguish among linear, quadratic, and exponential functions that are expressed in a table of values, a sequence, a context, algebraically, and/or graphically, and interpret the domain and range of each as it applies to a given context.

Terms

- Exponential
- Linear
- Quadratic
- Domain
- Range

Sample problem

This graph is an example of what type of function?



- a) absolute value
- b) exponential
- c) linear
- d) quadratic

Sample problem

Based on the values in the table, what function best represents the relationship between x & y?

x	y
-2	.75
-1	1.5
0	3
1	6
2	12

- a) absolute value
- b) exponential
- c) linear
- d) quadratic

Sample problem

A small (fictional) country had a population of 2,254,000 people in the year 2000. The population grows steadily at a rate of 3.5% each year. What is the best type of function to represent the relationship between the year and the population?

- a) absolute value
- b) exponential
- c) linear
- d) quadratic

STANDARD – Algebra

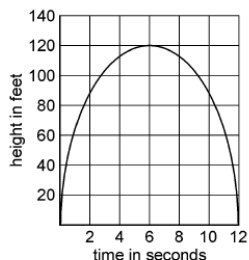
H.3A.4 Given a quadratic or exponential function, interpret and analyze the relationship between the independent and dependent variables, and evaluate the function for specific values of the domain.

Terms

Independent variable

Dependent variable

Sample problem



The graph represents the amount of time it takes an object thrown into the air to reach a specific height. Which of the following represents the amount of time it takes for the object to reach its maximum height?

- A. 120 seconds
- B. 12 seconds
- C. 6 seconds
- D. 4 seconds

Sample problem

A ball is tossed into the air. The height of the ball as a function of time can be described by the equation $h = -16t^2 + 72t$. In this equation h is the height of the ball in feet and t is time in seconds. After how many seconds will the ball hit the ground?

- a) 4 seconds
- b) 4.5 seconds
- c) 9 seconds
- d) 56 seconds

Sample problem

The height of a rocket launched into the air from an initial height of 320 feet with an initial velocity of 160 feet per second can be modeled with the equation

$$h = -16t^2 + 160t + 320$$

Where h is the height of the rocket and t is the time in seconds after the rocket is launched. After how many seconds does the rocket reach the vertex?

- a) 10 seconds
- b) 8 seconds
- c) 7 seconds
- d) 5 seconds

STANDARD – Algebra

H.3A.5 Given a quadratic equation of the form $x^2 + bx + c = 0$ with integral roots, determine and interpret the roots, the vertex of the parabola that is the graph of $y = x^2 + bx + c$, and an equation of its axis of symmetry graphically and algebraically.

Terms

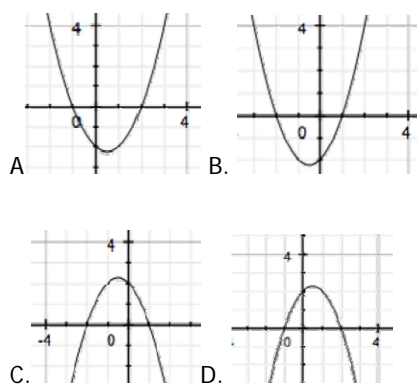
- Roots
- x-intercepts
- vertex
- axis of symmetry
- parabola

Sample problem

What are the roots to the equation $y = (x - 4)(2x + 1)$?

- a) $x = -4, x = \frac{1}{2}$
- b) $x = 4, x = -\frac{1}{2}$
- c) $x = 4, x = 1$
- d) $x = 4, x = -1$

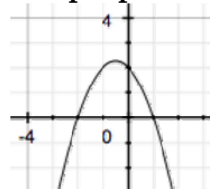
Sample problem



Which graph above represents the quadratic equation $y = x^2 + x - 2$?

- a) A.
- b) B.
- c) C.
- d) D.

Sample problem



What is the equation for the axis of symmetry?

- a) $x = \frac{1}{2}$
- b) $x = -\frac{1}{2}$
- c) $x = 1$
- d) $x = -2$

STANDARD – Geometry

H.1G.1 Identify, apply, and analyze angle relationships among two or more lines and a transversal to determine if lines are parallel, perpendicular, or neither.

Terms

Parallel

Perpendicular

Transversal

Alternate interior angles

Corresponding angles

Same-side angles

Consecutive

Supplementary

complementary

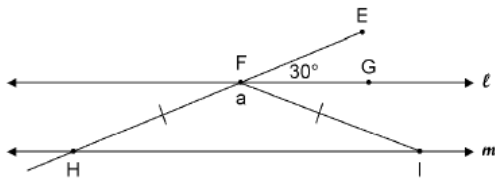
Sample problem



Find the value of x in the diagram above.

- A. ~~65°~~
- B. ~~40°~~
- C. ~~15°~~
- D. ~~148°~~

Sample problem



Find the measure of angle a , given that $l \parallel m$, $m\angle EFG = 30^\circ$ and $\overline{FH} \cong \overline{FI}$.

- A. 30°
- B. 60°
- C. 90°
- D. 120°

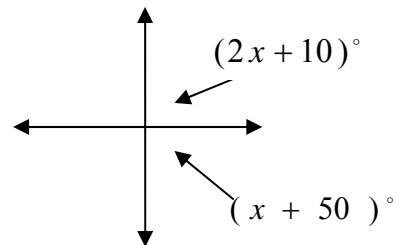
Sample problem

For $a \parallel b$ and $m\angle b = 133^\circ$. Calculate $a + b + c$.



- a) 266°
- b) 313°
- c) 227°
- d) 399°

Sample problem



For the indicated angles in the diagram, the value of x is 40, what is true about the intersecting lines?

- a) They are parallel.
- b) They have alternate interior angles.
- c) They are perpendicular.
- d) They have corresponding angles.

STANDARD – Geometry

H.1G.2 Apply theorems, properties, and definitions to determine, identify, and justify congruency or similarity of triangles and to classify quadrilaterals.

Terms

Congruent triangles
SSS
SAS
ASA
AAS
HL
Similar triangles
Scale factor
Classify quadrilateral

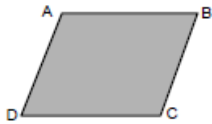
Sample problem

Given quadrilateral ABCD, with diagonal \overline{BD} , has $\overline{AB} \cong \overline{CD}$. Which statement would make $\triangle BAD \cong \triangle DCB$?

- a) $\angle C \cong \angle A$
- b) $\overline{AB} \parallel \overline{CD}$
- c) $\overline{AD} \parallel \overline{CB}$
- d) $\overline{AB} \perp \overline{BC}$

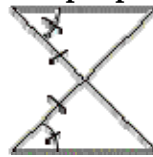
Sample problem

Given that ABCD is a parallelogram, what conclusion about ABCD can be made?



- A. All the sides of ABCD are equal in length.
- B. $\angle A$ and $\angle C$ are supplementary angles.
- C. $\angle A$ and $\angle B$ are supplementary angles.
- D. $\angle D$ and $\angle B$ are complementary angles.

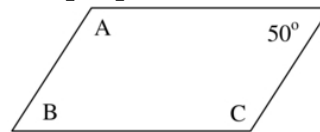
Sample problem



Which theorem justifies that the above two triangles are congruent?

- a) SSS
- b) SAS
- c) ASA
- d) AAS

Sample problem



If $A = (x + 70)^\circ$, $B = (x - 10)^\circ$ and $C = (2x + 10)^\circ$, then what is NOT true about the above quadrilateral?

- a) $\angle C \cong \angle A$
- b) $m\angle B = 50^\circ$
- c) $\angle C$ & $\angle A$ are supplementary
- d) ABCD is a parallelogram

STANDARD – Geometry

H.1G.3 Apply theorems of corresponding parts of congruent and similar figures to determine missing sides and angles of polygons.

Terms

Congruent

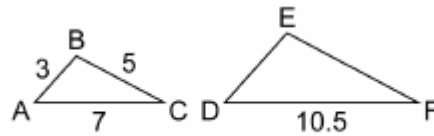
Congruent figures

Similar

Similar figures

Corresponding Parts of Congruent Triangles are Congruent (CPCTC)

Sample problem

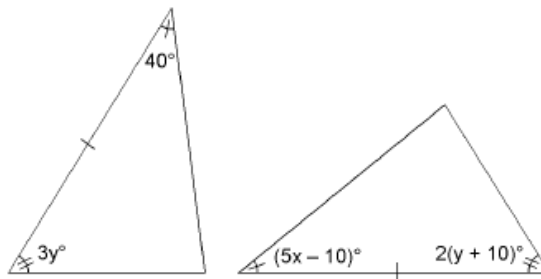


$\triangle ABC$ and $\triangle DEF$ are similar, with \overline{AB} corresponding to \overline{DE} , \overline{BC} to \overline{EF} , and \overline{AC} to \overline{DF} .

Find the length of \overline{DE} .

- A. 6.3
- B. 4.5
- C. 3.5
- D. 3

Sample problem

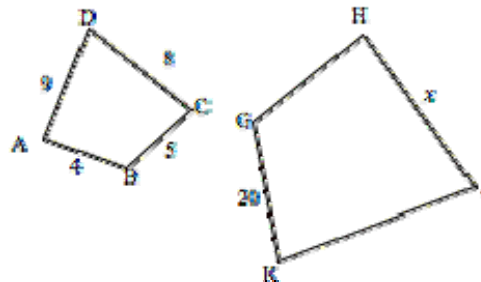


Using the figures above, find the value of x and the value of y .

- A. $x = 10$ and $y = 10$
- B. $x = 10$ and $y = 20$
- C. $x = 40$ and $y = 20$
- D. $x = 40$ and $y = 60$

Sample problem

$ABCD \sim EFGH$



Find the value of x .

- a) 24
- b) 32
- c) 40
- d) 39

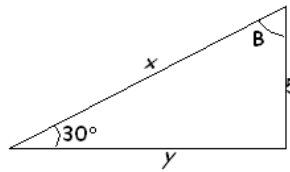
STANDARD – Geometry

H.1G.4 Use trigonometric ratios (sine, cosine and tangent) and the Pythagorean Theorem to solve for unknown lengths in right triangles.

Terms

- Sine
- Cosine
- Tangent
- Pythagorean Theorem

Sample problem

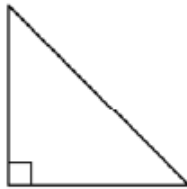


Given that the triangle is a right triangle, find the values of x & y .

- a) $x = 10$; $y = 8.66$
- b) $x = 10$; $y = 5.77$
- c) $x = 5.77$; $y = 10$
- d) $x = 8.66$; $y = 5.77$

Sample problem

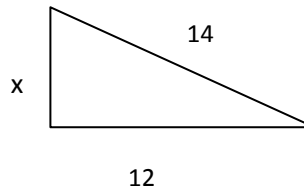
The two legs of a right triangle are each 15 cm.



Which answer best describes the length of the hypotenuse?

- A. 15.0 cm
- B. 21.2 cm
- C. 25.4 cm
- D. 30.0 cm

Sample problem

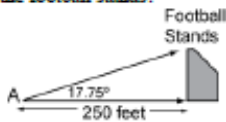


Given that the triangle is a right triangle, find the value of x .

- a) $x = 18.4$
- b) $x = 2$
- c) $x = 7.2$
- d) $x = 8.2$

Sample Items:

Ted wants to measure the height of the football stands. He walks to point A 250 feet from the stands. He measures the angle from the ground to the top of the stands to be 17.75° . How high are the football stands?

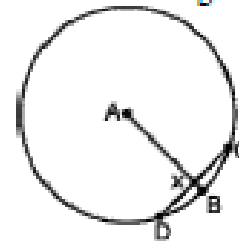


$\cos 17.75^\circ = 0.9524$
 $\sin 17.75^\circ = 0.3049$
 $\tan 17.75^\circ = 0.3201$

- A. 76 feet
- B. 80 feet
- C. 238 feet
- D. 781 feet

Sample problem

In circle A the radius of the circle is 17, $CD = 16$ and \overline{AB} is perpendicular to \overline{CD} . Use the information to find the length of \overline{AX} .



- A. 5.7
- B. 8.0
- C. 15.0
- D. 16.0

STANDARD – Geometry

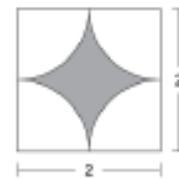
H.1G.5 Determine the missing dimensions, angles, or area of regular polygons, quadrilaterals, triangles, circles, composite shapes, and shaded regions..

Terms

- Regular polygon
- Composite shape
- Region

Sample problem

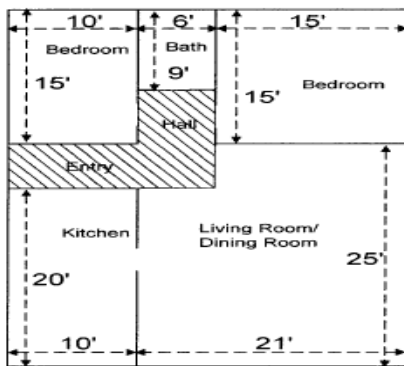
The area of the shaded region is _____.



- A. $4 - \pi$
- B. $\pi - 4$
- C. $8 - 4\pi$
- D. $4 - 4\pi$

Sample problem

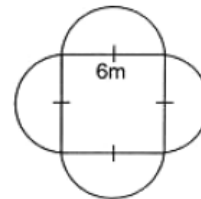
Toni wants to have hardwood floors installed in the entry and hall of her new house. If flooring costs \$10 per square foot installed, how much will Toni have to spend on flooring?



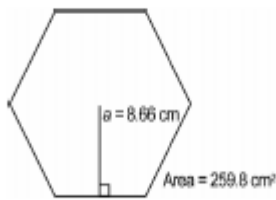
- A. \$116
- B. \$1,000
- C. \$1,050
- D. \$1,160

Sample problem

A 6-meter by 6-meter square has semi-circles on each side. What is the area of the figure to the nearest hundredth of a square meter?



- A. 64.27 m²
- B. 80.55 m²
- C. 92.55 m²
- D. 149.10 m²



A formula for the area (A) of a regular polygon is $A = \frac{1}{2} ap$

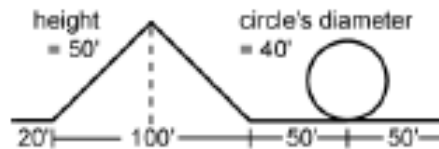
(where a is the length of the apothem and p is the perimeter of the polygon). Use the formula to find the perimeter of this regular hexagon.

- A. $p = 15$ cm
- B. $p = 30$ cm
- C. $p = 43.3$ cm
- D. $p = 60$ cm

Sample problem

A roller coaster has a large rise and drop followed by a complete circle. The following diagram shows measurements for the track. An extra 20 feet are needed for cutting and welding.

How many feet of track should be ordered? (Use $\pi = 3.14$)



- A. 280 feet
- B. 407 feet
- C. 415.6 feet
- D. 1537.4 feet

<p>STANDARD – Geometry</p> <p>H.1G.6 Determine if three given lengths form a triangle. If the given lengths form a triangle, classify it as acute, right, or obtuse. Determine the missing dimensions, angles, or area of regular polygons, quadrilaterals, triangles, circles, composite shapes, and shaded regions.</p> <p>Terms Acute triangle Right triangle Obtuse triangle</p>	<p>Sample problem</p> <p>Which of the following set of side lengths can form a triangle? I. 5, 6, 9 II. 4, 8, 12 III. 7, 8, 17</p> <p>A. I only B. II only C. III only D. I and III</p>
	<p>Sample problem</p> <p>What type of triangle has side lengths of 5, 7 and 10?</p> <p>a) acute b) right c) obtuse d) not a triangle</p>
	<p>Sample problem</p> <p>If two sides of a triangle are 6.5 and 9.4, what are the possible lengths of the third side?</p> <p>a. $2.9 < x < 6.5$ b. $2.9 < x < 9.4$ c. $2.9 < x < 15.9$ d. $6.5 < x < 15.9$</p>

STANDARD – Geometry

H.1G.7 In problems involving circles, apply theorems and properties of chords, tangents, and angles; and theorems and formulas of arcs and sectors.

Terms

Chord

Tangent

Inscribed angle

Circumscribed angle

Arc

Sector

Sample problem



In circle O at right, \overline{NP} is tangent at point Q , $ON = 8$ and $NP = 2$. Calculate the length QP .

- a. 6
- b. 8
- c. 10
- d. 12

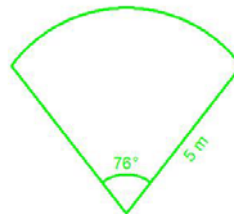
Sample problem



Find the value of x (C is the center of the circle).

- a. 36°
- b. 72°
- c. 144°
- d. 216°

Sample problem



Find the approximate area of the sector above with central angle of 76° and radius length of 5 m. Use $\pi = 3.14$.

- a. 6.63 m^2
- b. 3.31 m^2
- c. 8.29 m^2
- d. 16.57 m^2

STANDARD – Geometry

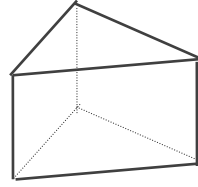
H.2G.1 Identify, classify, model, sketch, and label representations of three-dimensional objects from nets and from different perspectives.

Terms

Net

Three-dimensional

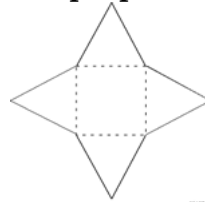
Sample problem



A cross-section of the triangular prism above is taken with a plane that is parallel to the triangular bases. What is the shape of the resulting two-dimensional cross-section?

- a) rectangle
- b) square
- c) rhombus
- d) triangle

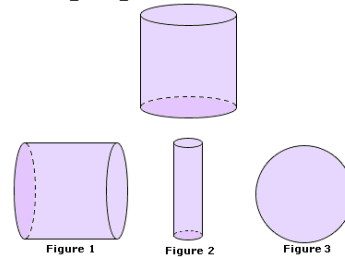
Sample problem



What is the three-dimensional figure that would be formed from the net above?

- a) tetrahedron
- b) square pyramid
- c) cube
- d) cone

Sample problem



Which of the figures represents the top view of the cylinder?

- a) Figure 1
- b) Figure 2
- c) Figure 3
- d) None

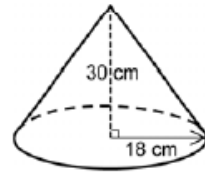
STANDARD – Geometry

H.2G.2 Identify and apply formulas for surface area and volume of spheres; right solids, including rectangular prisms and pyramids; cones; and cylinders; and compositions thereof. Solve related context-based problems.

Terms

Surface area	Cone
Volume	Cylinder
Sphere	Lateral area
Prism	Base area
Pyramid	Slant height
Height	

Sample problem



The volume of the cone is ? cm^3 .

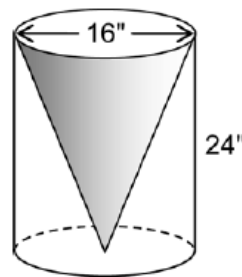
- A. 2592π
- B. 3240π
- C. 7776π
- D. 9720π

Sample problem

When an elastic toy ball is fully inflated, it has a diameter of 7 inches. If some of the air is removed, the diameter is only 5 inches. What is the DIFFERENCE in the volume between the two sizes?

- a) 15in^3
- b) 114in^3
- c) 523in^3
- d) 913in^3

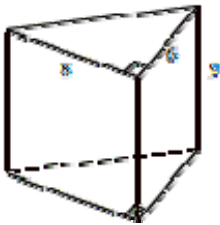
Sample problem



What is the volume left in the cylinder after the shaded cone region is removed?

- A. $1,024\pi \text{ in.}^3$
- B. $1,536\pi \text{ in.}^3$
- C. $2,048\pi \text{ in.}^3$
- D. $4,096\pi \text{ in.}^3$

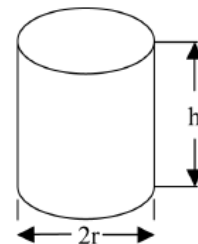
Sample problem



Find the surface area, in square units, of the triangular prism.

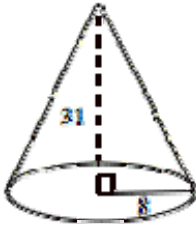
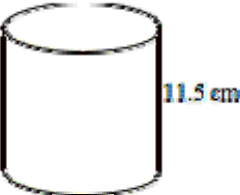
- a) 216
- b) 264
- c) 432
- d) 174


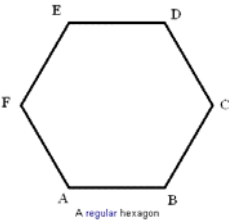
Sample problem



For which values of r and h will the volume of the right circular cylinder shown be $1000\pi \text{ cm}^3$?

- A. $r = 5 \text{ cm}; h = 10 \text{ cm}$
- B. $r = 5 \text{ cm}; h = 20 \text{ cm}$
- C. $r = 10 \text{ cm}; h = 10 \text{ cm}$
- D. $r = 10 \text{ cm}; h = 20 \text{ cm}$

<p>STANDARD – Geometry H.2G.3 Identify and apply formulas to solve for the missing dimensions of spheres and right solids, including rectangular prisms and pyramids, cones, and cylinders, both numerically and symbolically.</p> <p>Terms</p> <table border="0"> <tr> <td>Surface area</td> <td>Cone</td> </tr> <tr> <td>Volume</td> <td>Cylinder</td> </tr> <tr> <td>Sphere</td> <td>Lateral area</td> </tr> <tr> <td>Prism</td> <td>Base area</td> </tr> <tr> <td>Pyramid</td> <td>Slant height</td> </tr> <tr> <td>Height</td> <td></td> </tr> </table>	Surface area	Cone	Volume	Cylinder	Sphere	Lateral area	Prism	Base area	Pyramid	Slant height	Height		<p>Sample problem</p>  <p>Find the length of the slant height of this right circular cone.</p> <p>a) 32.0 c) 6.2 b) 29.9 d) 64</p>
Surface area	Cone												
Volume	Cylinder												
Sphere	Lateral area												
Prism	Base area												
Pyramid	Slant height												
Height													
	<p>Sample problem</p>  <p>Given that the volume of the cylinder above is $736\pi\text{cm}^2$, find the radius of the circular base.</p> <p>a) 64 cm b) 8 cm c) 16 cm d) 32 cm</p>												
	<p>Sample problem</p> <p>Find the radius of a sphere with a volume of $2304\pi\text{ in}^3$.</p> <p>a) 12 in b) 14.5 in c) 55.4 in d) 9.9 in</p>												

<p>STANDARD – Geometry H.3G.1 Recognize and identify line and rotational symmetry of two-dimensional figures.</p> <p>Terms Line symmetry Rotational symmetry</p>	<p>Sample problem</p> <p>Which quadrilateral has exactly one line of symmetry?</p> <p>a) square b) parallelogram c) isosceles trapezoid d) rectangle</p>
	<p>Sample problem</p>  <p>How many lines of symmetry does the figure above have?</p> <p>a) one c) three b) two d) four</p>
	<p>Sample problem</p>  <p>A regular hexagon</p> <p>What rotational symmetry does the above regular hexagon have?</p> <p>a) 90° c) 60° b) 45° d) 270°</p>

STANDARD – Geometry

H.3G.2 Identify and perform single and composite transformations of geometric figures in a plane, including translations, origin-centered dilations, reflections across either axis or $y = \pm x$, and rotations about the origin in multiples of 90° .

Terms

- Transformation
- Translation
- Reflection
- Rotation
- Dilation
- Scale factor
- Preimage
- Image

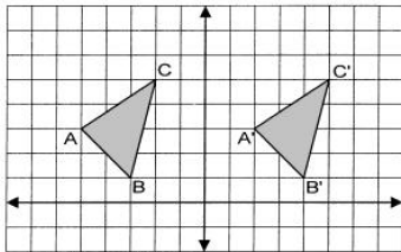
Sample problem

The coordinates of point A are $(-5, 3)$. If A is reflected over the y-axis, then translated 3 units right and 4 units down, the new coordinates of A are:

- a) $(5, 3)$
- b) $(8, -1)$
- c) $(-2, -1)$
- d) $(-2, -7)$

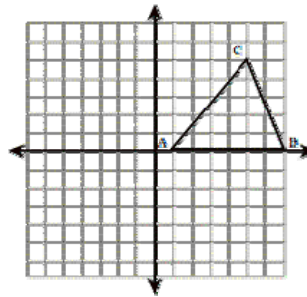
Sample problem

In the illustration, triangle A'B'C' is formed by adding seven units to the x-coordinate of each vertex of triangle ABC. The best term for describing triangle A'B'C' is



- A. a flip of $\triangle ABC$.
- B. a reflection of $\triangle ABC$.
- C. a rotation of $\triangle ABC$.
- D. congruent to $\triangle ABC$.

Sample problem



If the triangle above is rotated about the origin 180° , then what is the new ordered pair for B' ?

- a) $(-7, 0)$
- b) $(0, 7)$
- c) $(7, 0)$
- d) $(0, -7)$

Sample problem

What are the coordinates of the point obtained if the point $A = (3, 7)$ is rotated 180° about the midpoint between A and the origin?

- A. $(-3, -7)$
- B. $(1\frac{1}{2}, 3\frac{1}{2})$
- C. $(3, 7)$
- D. $(0, 0)$

Sample problem

$\triangle ABC$ has the coordinates $A(8, 5)$, $B(-2, 4)$ and $C(9, -3)$ is dilated with respect to the origin with a scale factor of $\frac{1}{2}$, then what is the new ordered pair for A' ?

- a) $(16, 10)$
- b) $(-8, -5)$
- c) $(4, \frac{5}{2})$
- d) $(7\frac{1}{2}, 4\frac{1}{2})$

STANDARD – Geometry

H.3G.4 Apply slope, distance, and midpoint formulas to solve problems in a coordinate plane.

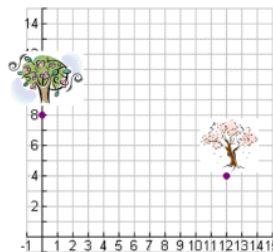
Terms

Slope

Distance formula

Midpoint formula

Sample problem



Mark planted two trees on a planning grid at coordinates $(0, 8)$ and $(12, 4)$. He wants to plant a hedge that is the same distance from each of the two trees. Determine the midpoint of the line segment connecting the two trees.

- a) $M = (6, 2)$
- b) $M = (6, 4)$
- c) $M = (6, 6)$
- d) $M = (6, 0)$

Sample problem

One endpoint of a segment is located at $(-8, 6)$ and the midpoint is at $(-4, 0)$. What is the ordered pair of the other endpoint of the segment?

- a) $(-4, 3)$
- b) $(0, 6)$
- c) $(0, -6)$
- d) $(-4, 0)$

Sample problem

M is the midpoint of \overline{AB} .
The coordinates of A are $(2, 3)$
and the coordinates of M are
 $(4.5, 6)$.

Find the coordinates of B .

- a) $B = (7, 9)$
- b) $B = (9, 12)$
- c) $B = (4, 6)$
- d) $B = (6.5, 9)$

Sample problem

What is the distance between the two points $(3, 13)$ and $(-2, 1)$

- a) 13
- b) $\sqrt{197}$
- c) 17
- d) $\sqrt{145}$

<p>STANDARD – Statistics</p> <p>H.1S.1 Given a context, determine appropriate survey methods, analyze the strengths and limitations of a particular survey, observational study, experiment, or simulation, and the display of its data.</p> <p>Terms Empirical data Observational study Experiment Survey Strength of a survey Limitation of a survey Data display</p>	<p>Sample problem</p> <p>You are the manager of a local grocery store. You want to know whether your customers are satisfied with the new U-Scan check-out lines. Which of the methods below would be the best way for you to collect data?</p> <ol style="list-style-type: none"> Have customers go online to complete a survey Survey every 10th shopper that leaves the grocery store Survey all customers between 10am and 2pm Observe the faces of your customers when they leave the grocery store 						
	<p>Sample problem</p> <p>Students at your school were asked who their favorite band is. Which of the choices below would be the best way to display this data?</p> <ol style="list-style-type: none"> Bar graph Box and whisker plot Line graph Stem and leaf plot 						
<p>Sample Problem</p> <p>Over the past few weeks, you notice that the lunch lines in the cafeteria are longer. You wonder what might be the reason for this. You would like to survey students to determine what the cause for this change might be. Which of the methods below would be the best way to gather information from students?</p> <ol style="list-style-type: none"> Give a survey to a sample of students in the lunch lines Perform a simulation Do an observational study of students as they go to lunch Perform an experiment 	<p>Sample problem</p> <p>A survey of 1000 people was conducted on-line in a 24 hour time period to determine whether people preferred downloading music or buying music CDs in the store. The survey results are shown in the bar graph below. Which of the following makes the data biased?</p> <div> <table border="1"> <caption>Preferred Method to Purchase Music</caption> <thead> <tr> <th>Method to Purchase Music</th> <th>Percent of People Surveyed</th> </tr> </thead> <tbody> <tr> <td>Download Music</td> <td>70</td> </tr> <tr> <td>Buy CDs in Store</td> <td>30</td> </tr> </tbody> </table> </div> <ol style="list-style-type: none"> The survey was taken on-line The data is displayed on a bar graph Only 1000 shoppers were surveyed The survey only lasted 24 hours 	Method to Purchase Music	Percent of People Surveyed	Download Music	70	Buy CDs in Store	30
Method to Purchase Music	Percent of People Surveyed						
Download Music	70						
Buy CDs in Store	30						

STANDARD – Statistics

H.1S.2 Evaluate data-based reports by considering the source of the data, the design of the study, and the way the data was analyzed and displayed.

Terms

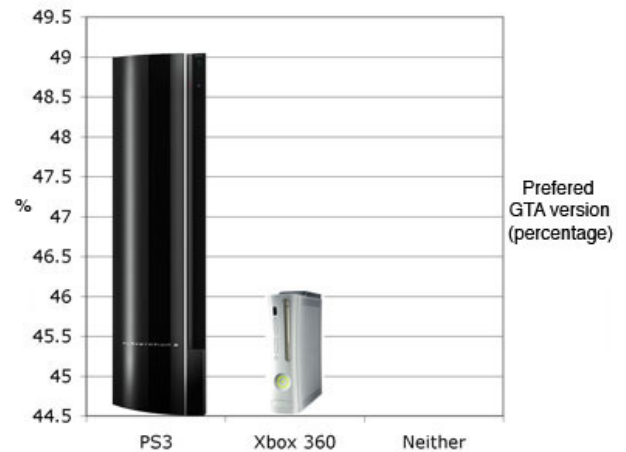
Data display

Evaluate

Source of data

Sample problem

What is wrong with this graph?



- a. Starting percent should be at zero.
- b. Neither has no graphic
- c. The graphics for PS3 and Xbox 360 are 3-D.
- d. The scale for percent increases by 0.5% instead of 1%.

Sample problem

Coca-Cola, the makers of Full Throttle energy drink, recently released a study that investigated the drinking of Full Throttle energy drinks and sleeplessness. The study found that 13 out of 150 teenagers who regularly drink a Full Throttle a day experience sleeplessness whereas 16 out of 135 teenagers who do not regularly drink a Full Throttle a day experience sleeplessness. The study concluded that regularly drinking Full Throttle does not cause insomnia (sleeplessness). Which of the following is the best reason for why these results may be inaccurate?

- a. The number of Full Throttle drinkers and non-drinkers is not equal.
- b. The study only used teenagers.
- c. Other soft drinks were not included in the study.
- d. The study was conducted by a company that makes the product.

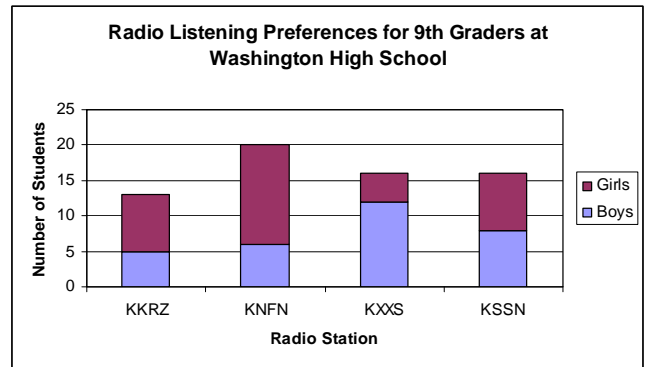
STANDARD - Statistics

H.1S.3 Compare and draw conclusions about two or more data sets using graphical displays or central tendencies and range.

Terms:

Graphical display
Range
Histogram
Stem and leaf plot
Measures of central tendency
Mean
Median
mode

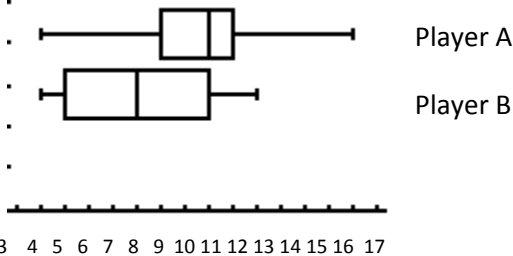
Sample problem



What radio station do the least number of girls listen to?

- a) KKRZ
- b) KNFN
- c) KXXS
- d) KSSN

Sample problem

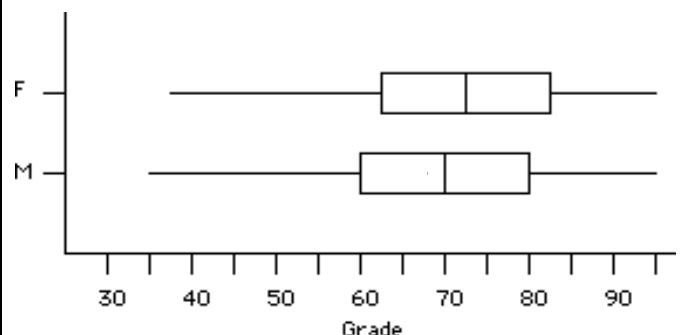


Based on the box-and whisker plots for the points scored per game for two players on the basketball team, which of the following statements is true?

- a) Player A has a higher point per game average than player B.
- b) Player B has the lowest point per game.
- c) The range of point per game values for Player A is less than the range of Player B.
- d) 50% of Player B's games were 11 points or higher.

Sample problem

Consider the following box plots of the grades in a course in statistics for students at Fairmont (F) and at Middleton (M)



Which of the following is correct?

- (a) The range of the Fairmont students is greater than the range of the Middleton students.
- (b) The median grade for the Middleton students is greater than the median grade for the Fairmont students.
- (c) The minimum grade of the Fairmont students is greater than the minimum grade of the Middleton students.
- (d) The mean of the Fairmont students is less than the mean of the Middleton students.

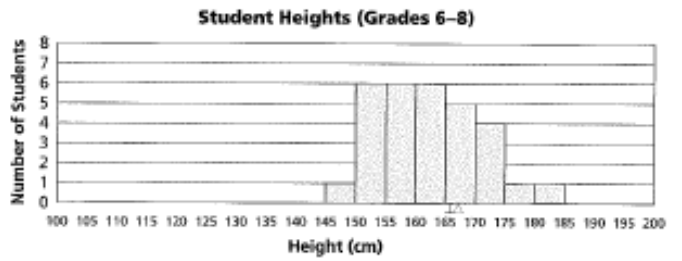
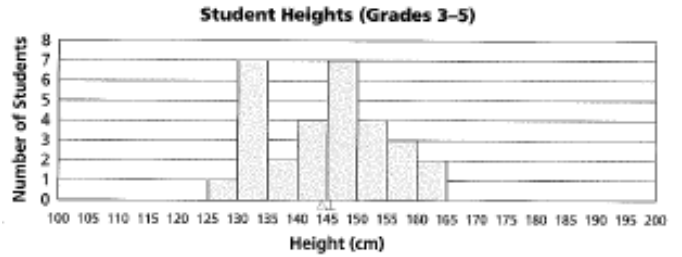
Sample problem

2004		2010
1	1	
3	2	7 9
4 3 3	3	2 3 3 5
8 6 5	4	8 8 9
4 3 1 1	5	0 2 3

The above Stem and Leaf plot displays the number of home burglaries per month that resulted in an arrest in Southwest Sacramento. If another graphical display was used with this data, then which would be the best to use.

- a) Histogram
- b) Circle graph
- c) Scatterplot
- d) None of the above

Sample Problem



Which of the following is true for the heights of students in grades 6-8 compared to students in grades 3-5?

- a. The mean height for students in grades 3-5 is more than the mean height for students in grades 6-8.
- b. The range of the heights for students in grades 3-5 is more than the range of the heights for students in grades 6-8.
- c. The range of the heights for students in grades 3-5 is less than the range of the heights for students in grades 6-8.
- d. The median height for students in grades 3-5 is less than the median height for students in grades 6-8.

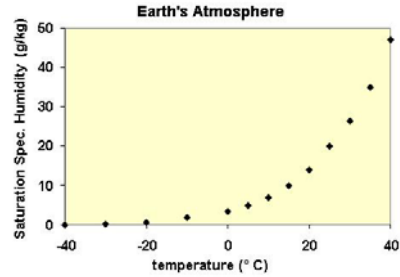
STANDARD – Statistics

H.1S.4 Use or construct a scatter plot for a given data set, determine whether there is a(n) linear, quadratic, exponential, or not trend. If linear, determine if there is a positive or negative correlation among the data; and, if appropriate, sketch a line of best fit, and use it to make predictions.

Terms

- | | |
|-------------------|----------------------|
| Scatter plot | No trend |
| Linear trend | Positive correlation |
| Quadratic trend | Negative correlation |
| Exponential trend | Line of best fit |

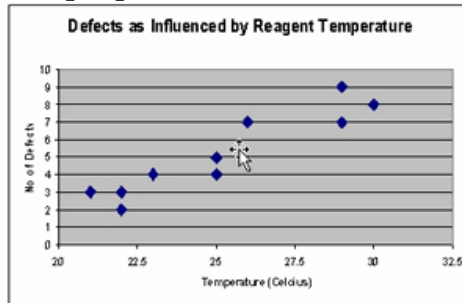
Sample problem



Which statement best describes the scatter plot shown?

- A. Linear
- B. Exponential Growth
- C. Quadratic
- D. Exponential Decay

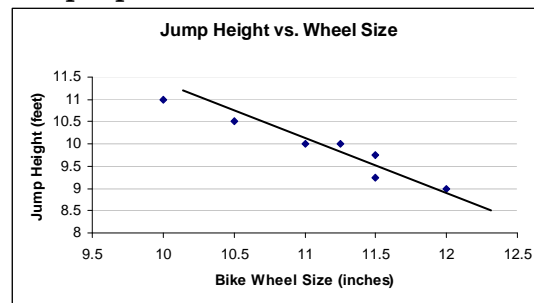
Sample problem



Which best describes the trend line for the data in the scatter plot?

- a. Exponential Growth
- b. Positive Linear
- c. Negative Linear
- d. Exponential Decay

Sample problem



Based on the line of best fit, predict the height of a jump for a bike with a wheel size of 10.75 inches.

- a. 10.5 feet
- b. 12 feet
- c. 10 feet
- d. 9.25 feet

STANDARD - Statistics

H.1S.5 Construct, analyze, and interpret tables, scatter plots, frequency distributions, and histograms of data sets.

Terms

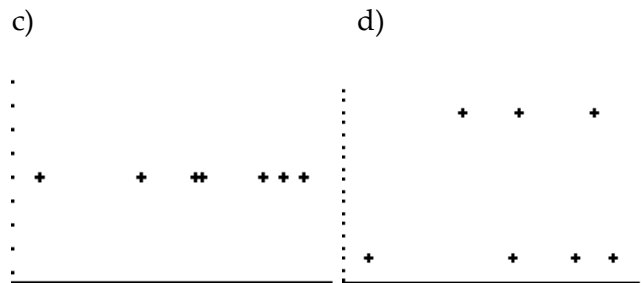
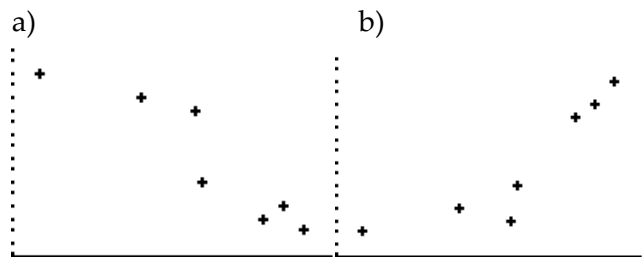
- Scatter plot
- Frequency distribution
- Histogram

Sample problem

The data for the number of text messages sent per month and the cost of the cell phone bill of 7 students is given in the table. The scatter plots below have Text Messages along the horizontal axis and Cost along the vertical axis. Which scatter plot represents the values in the table?

TEXT	COST
125	32
200	34
240	33
245	36
290	42
304	43
320	45

Name=



Sample problem

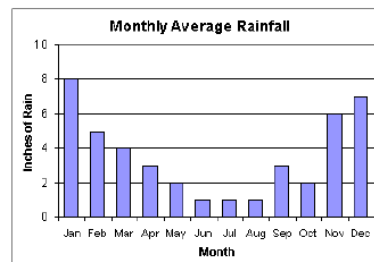
Test Scores	Frequency
90 – 100	4
80 – 89	8
70 – 79	7
60 – 69	2
0 - 59	2

Given the frequency table above, in which interval does the median fall?

- a) 90 – 100
- b) 80 – 89
- c) 70 – 79
- d) 60 - 69

Sample problem

According to the graph, what is the median of the monthly average rainfall?



- A. 1 inch
- B. 3 inches
- C. 4 inches
- D. 7 inches

STANDARD – Statistics

H.2S.1 Identify, analyze, and use experimental and theoretical probability to estimate and calculate the probability of simple events.

Terms:

- Probability
- Experimental probability
- Theoretical probability
- Simple event

Sample problem

1) A multiple-choice test has questions with answers A, B, C, or D. What is the probability of randomly guessing the answer to question #1 correct?

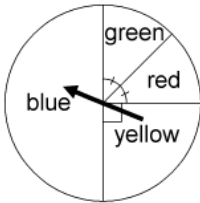
- a. $\frac{1}{16}$
- b. $\frac{1}{8}$
- c. $\frac{1}{4}$
- d. $\frac{1}{2}$

Sample problem

The blue part is $\frac{1}{2}$ of the spinner. The

yellow part is $\frac{1}{4}$ of the spinner. The red and

green parts are the same size. James spins the spinner 80 times. About how many times should it land in the green part?



- A. 10
- B. 20
- C. 40
- D. 60

Sample problem

Karen spins a spinner that has four colors – red, blue, yellow and green – each $\frac{1}{4}$ of the spinner. If she spins the spinner 20 times, what is the most likely number of times she will spin blue.

- a) 10 times
- b) 4 times
- c) 5 times
- d) 12 times

Sample problem

Tina counts 36 deer and tags them in a forest. She goes back 6 months later and sees 70 deer, 10 of which are tagged. Estimate the number of deer in the forest.

- a) 210
- b) 252
- c) 2520
- d) 700

Sample problem

Given the experimental probability of Cal hitting a home run when he is at bat is 0.2, estimate the number of times Cal hits a home run if he is at bat 4 times a game.

- a) 0 times
- b) 2 times
- c) 1 times
- d) 4 times

<p>STANDARD – Statistics H.2S.2 Determine the sample space of a probability experiment.</p> <p>Terms: Sample space</p>	<p>Sample problem</p> <p>A student flips a coin two times. H represents a “head” and T represents a “tail” on the coin. What are the possible outcomes he can have?</p> <p>a) HH, TT b) HH, HT, TT c) HH, HT, TT, TH d) HT, HT, TH, TH</p>
<p>Sample problem</p> <p>A bag contains 8 blue, 3 red, and 6 white chips. Only red chips are added to the bag. How many red chips must be added to the bag for the probability of drawing a red chip to be $\frac{1}{3}$?</p> <p>A. 2 B. 3 C. 4 D. 6</p>	<p>Sample problem</p> <p>A student spins a spinner with three colors – red (R), blue (B) and green (G) – two times. What are the possible outcomes the student can have?</p> <p>a) RR, BB, GG b) RR, RB, RG, BB, BG, GG c) RR, RB, RG, BR, BB, BG, GR, GB, GG d) RB, RG, BR, BG, GR, GB</p>
	<p>Sample problem</p> <p>A bag has four marbles. Two are blue (B), one green (G), one red (R). If two marbles are selected, with replacement, then how many possible outcomes are in the sample space?</p> <p>a) 4 b) 6 c) 8 d) 16</p>

STANDARD – Statistics

H.2S.3 Compute and interpret probabilities for independent, dependent, complementary, and compound events using various methods (e.g., diagrams, tables, area models and counting techniques).

Terms:

Independent events
 Dependent events
 complement
 Complementary event
 Compound events
 Area models
 Counting techniques
 With replacement
 Without replacement

Sample problem

A standard deck of cards has 26 red cards and 26 black cards. 2 cards are drawn out of the deck. What is the probability the second card is red, given the first card was black. (The first card was not replaced in the deck before the second card was drawn.)

- A. $\frac{50}{51}$ B. $\frac{26}{52}$ C. $\frac{26}{51}$ D. $\frac{25}{52}$

Sample problem

The chances of winning the 3-number lottery are about 1 out of 1,000. Sally has played the same 3-digit number in the lottery for 999 days and has never won. What are the chances that she will win on the 1,000th day?

- A. 1 out of 2
 B. 999 out of 1,000
 C. 1 out of 1
 D. 1 out of 1,000

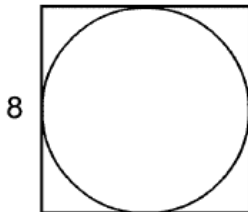
Sample problem

Joe has two fair dice (faces numbered 1-6) and a fair coin. He rolls the dice and tosses the coin. What is the probability Joe rolls one three (3), one four (4), and tosses a head?

- A. $\frac{1}{216}$ B. $\frac{1}{36}$ C. $\frac{1}{24}$ D. $\frac{5}{6}$

Sample problem

A dart hits a random point inside the square. What is the probability it will hit the target outside of the circle?



- A. $\frac{\pi}{16}$ C. $\frac{16 - 8\pi}{16}$
 B. $\frac{64 - 16\pi}{64}$ D. $\frac{\pi}{4}$

Sample problem

You roll a cube which has the numbers 17, 20, 23, 26, 28, and 29 on it. You then spin a spinner which has 6 equal sections. The letters on the spinner are G, E, F, K, C, and H. What is P(not 20 and E)?

- a) $\frac{1}{36}$
 b) $\frac{1}{6}$
 c) $\frac{5}{36}$
 d) $\frac{1}{2}$

Supporting Skills

STANDARD - Statistics

Multiple Choice This stem-and-leaf plot shows Ella's diving scores from a recent competition. What was Ella's lowest score for the competition?

- A. 0.03 B. 1.4
C. 8.0 D. None of these

Ella's Diving Scores

5		1	4
6		1	
7		6	
8		0	3

Key: 5 | 1 means 5.1

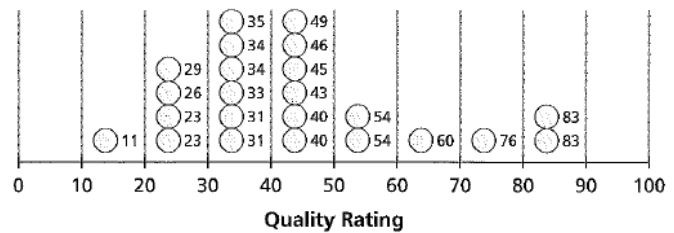
In this stem and leaf plot, which sentence is true?

3		1	1	2	5	7		
4		0	2	5	7	8		
5		2	3	3	6	7	9	9
6		1	4	4	4	6	7	
7		0	2	5	6			

7 | 0 = 70

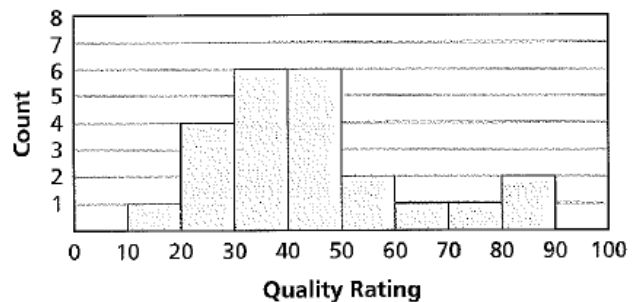
- A. There are 27 values in the data set.
B. The mean of the data is 56.
C. The range of the data is 46.
D. There are two modes.

Regular Peanut Butter Quality Ratings



Suppose you want to add a quality rating of 50 to the plot. In which interval would you put this value? Explain.

Regular Peanut Butter Quality Ratings



The histogram above show the same distribution as the interval bars with numerical values in the question above. A frequency axis has been added to the side of the plot. What are the minimum and maximum values on this histogram?

Minutes Spent on Homework

Grade 6	Grade 8
000000	0 0
555555	1 055
500	2 0005555
555	3 0000555
550	4 000555
00	5 05
	6 055
	7 5
	8 0

Key: 5 | 3 | 0 means 35 minutes for Grade 6 and 30 minutes for Grade 8

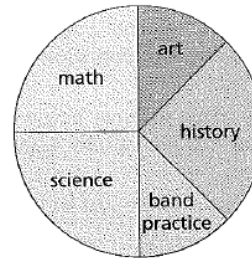
Use statistics to explain how the times for sixth-graders compare to the times for eighth-graders.

Supporting Skills

STANDARD - Statistics

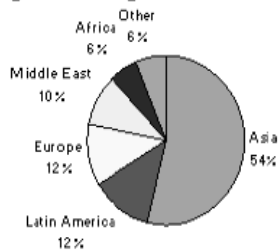
The pie chart shows the portion of time Harold spent on homework in each subject last week.

Time Spent on Homework



About what percent of his time did Harold spend on math, science, and history homework? Explain.

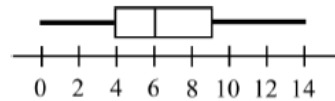
Origin of Foreign Students in U.S. College



Of the 500,000 foreign students who attended college in the U.S. in 2000, how many were from either Europe OR Asia?

- A. 330,000
- B. 270,000
- C. 210,000
- D. 60,000

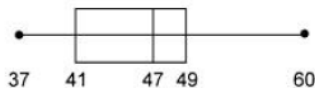
The Millennium Computer Company took a survey of 500 eighth grade students. They asked them how many hours per week they spent on the Internet. The results are displayed in this box-and-whisker plot. What is the interquartile range?



- A. 4 Hours
- B. 5 Hours
- C. 7 Hours
- D. 9 Hours

Use the box and whisker plot to determine which statements are true about the quiz score distribution.

Quiz Scores



- I. Half the scores are above 47.
 - II. Half the scores are between 41 and 49.
 - III. The high score was 60.
- A. I only
 - B. II only
 - C. I, II, and III
 - D. I and II only

Jennifer received the following test scores in geometry. What score will she have to get on the next test to have an average of 88%?

Jennifer's Geometry Scores

Test	1	2	3	4	5
Score	79%	94%	85%	96%	83%

- A. 87.4%
- B. 88.0%
- C. 89.5%
- D. 91.0%