

NUMBER AND QUANTITY

Ratios and Unit Rates

Grade 7

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| Score 4.0 | In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | |
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| | Score 3.5 <i>In addition to score 3.0 performance, partial success at score 4.0 content</i> | |
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Score 3.0

The student will:

- compute unit rates associated with ratios of fractions measured in like or unlike units (7.RP.1)
- explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate (7.RP.2d)
- use proportional relationships to solve multistep ratio and percent problems (e.g., simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error) (7.RP.3)

Sample Activities:

Carla fills $\frac{1}{3}$ of her water bottle in $\frac{1}{6}$ of a minute. How long does it take to fill her whole bottle?

Mark's science class built mousetrap cars. The graph below shows the distance three cars traveled (d) after (t) seconds

(a) Each graph has a point labeled. What does the point tell you about how far that car has traveled?

(b) Helen said that the ratio between the number of seconds each car travels and the number of meters it has traveled is constant. Is she correct? Explain.

LeAnn wants to buy a new I-phone. Store A has the phone on sale 35% off of the original price of \$295. Sales tax is 6 percent.

Store B is online and doesn't charge sales tax. The original price of the phone is \$275, and they have it on sale for 20% off. Which store has the better deal?

| | Score 2.5 | <i>No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content</i> | | | | | | | | | | | | | | | | | | | | | | |
|------------------|---|---|--|---------|---------|---------|---|---|---|---|--------|--------|---------|---------|---------|---------|---------|------|--------|---------|---------|---------|---------|---------|
| Score 2.0 | <p>The student will recognize or recall specific vocabulary, such as:</p> <ul style="list-style-type: none"> • commission problem, compute, constant of proportionality, equation, fee problem, fraction, graph, gratuity problem, like, markdown problem, markup problem, percent, percent decrease problem, percent error problem, percent increase problem, point, proportional relationship, quantity, ratio, simple interest problem, tax problem, unit, unit rate, unlike <p>The student will perform basic processes, such as:</p> <ul style="list-style-type: none"> • decide whether two quantities are in a proportional relationship (7.RP.2a) • identify the constant of proportionality or unit rate (7.RP.2b) • represent proportional relationships by equations (7.RP.2c) | | <p>Sample Activities:</p> <p>identify or produce definitions to given terms.</p> <p>The students in Ms. Simm's art class were mixing yellow and blue paint. She told them that two mixtures will be the same shade of green if the blue and yellow paint are in the same ratio.</p> <p>The table below shows the different mixtures of paint that the students made.</p> <p>(a) How many different shades of paint did the students make?</p> <p>(b) Write an equation that relates y, the number of parts of yellow paint, and b, the number of parts of blue paint for each of the different shades of paint the students made.</p> <table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>F</th> </tr> </thead> <tbody> <tr> <td>Yellow</td> <td>1 part</td> <td>2 parts</td> <td>3 parts</td> <td>4 parts</td> <td>5 parts</td> <td>6 parts</td> </tr> <tr> <td>Blue</td> <td>2 part</td> <td>3 parts</td> <td>6 parts</td> <td>6 parts</td> <td>8 parts</td> <td>9 parts</td> </tr> </tbody> </table> <p>For problem #2 at 3.0: How fast is each car traveling? How did you compute this from the graph?</p> | | A | B | C | D | E | F | Yellow | 1 part | 2 parts | 3 parts | 4 parts | 5 parts | 6 parts | Blue | 2 part | 3 parts | 6 parts | 6 parts | 8 parts | 9 parts |
| | A | B | C | D | E | F | | | | | | | | | | | | | | | | | | |
| Yellow | 1 part | 2 parts | 3 parts | 4 parts | 5 parts | 6 parts | | | | | | | | | | | | | | | | | | |
| Blue | 2 part | 3 parts | 6 parts | 6 parts | 8 parts | 9 parts | | | | | | | | | | | | | | | | | | |
| | Score 1.5 | <i>Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i> | | | | | | | | | | | | | | | | | | | | | | |
| Score 1.0 | With help, partial success at score 2.0 content and score 3.0 content | | | | | | | | | | | | | | | | | | | | | | | |
| | Score 0.5 | <i>With help, partial success at score 2.0 content but not at score 3.0 content</i> | | | | | | | | | | | | | | | | | | | | | | |
| Score 0.0 | Even with help, no success | | | | | | | | | | | | | | | | | | | | | | | |

OPERATIONS AND ALGEBRA

Addition and Subtraction

Grade 7

Score 4.0 In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught.

Score 3.5 In addition to score 3.0 performance, partial success at score 4.0 content

Score 3.0 **The student will:**

- apply properties of operations as strategies to add and subtract rational numbers (7.NS.1d)
- solve real-world and mathematical problems involving the addition and subtraction of rational numbers (7.NS.3)


Sample Activities:
 $5 \frac{1}{2} + (2 \frac{3}{4} - 1 \frac{1}{2} + 1) - (-\frac{3}{4} + \frac{1}{2}) =$

The chart below shows the time difference from Coordinated Universal Time (UTC), in Greenwich, England.

| India | Iran | Nepal | Venezuela | Newfoundland | Pitcairn Islands |
|------------------|-------------------|-------------------|------------------|------------------|------------------|
| +5 $\frac{1}{2}$ | + 4 $\frac{1}{2}$ | + 5 $\frac{3}{4}$ | -4 $\frac{1}{2}$ | -3 $\frac{1}{2}$ | -8 $\frac{1}{2}$ |

- How many hours is the time in India ahead of the time in Newfoundland?
- If it is 9:34 pm in Greenwich, England, what time is it in the Pitcairn Islands?
- How many hours is the time in Nepal ahead of the time in Venezuela?
- If it is 2:47 am in Iran, what time is it in the Pitcairn Islands?
- If it is 12:17 pm in Newfoundland, what time is it in Nepal?

Score 2.5 No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content

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|-------------------------|--|---|
| <p>Score 2.0</p> | <p>The student will recognize or recall specific vocabulary, such as:</p> <ul style="list-style-type: none"> • add, addition, diagram, difference, horizontal, integer, interpret, mathematical, number line, operation, property, rational number, real-world, represent, strategy, subtract, subtraction, sum, vertical <p>The student will perform basic processes, such as:</p> <ul style="list-style-type: none"> • represent addition and subtraction with rational numbers on a horizontal or vertical number line diagram (7.NS.1) • interpret sums and differences in real-world contexts (7.NS.1a; 7.NS.1b; 7.NS.1c) • apply properties of operations as strategies to add and subtract integers | <p>Sample Activities:</p> <p>identify or produce definitions to given terms.</p> <p>Use a number line to represent problems a-e above</p> <p>A number line is shown below. The numbers 0 and 1 are marked on the line, as are two other numbers a and b.</p>  <p>Which of the following numbers is negative? Choose all that apply. Explain your reasoning.</p> <p>(a) $a-1$</p> <p>(b) $a-2$</p> <p>(c) $-b$</p> <p>(d) $a+b$</p> <p>(e) $a-b$</p> <p>(f) $ab+1$</p> |
| | <p>Score 1.5</p> <p><i>Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i></p> | |
| <p>Score 1.0</p> | <p>With help, partial success at score 2.0 content and score 3.0 content</p> | |
| | <p>Score 0.5</p> <p><i>With help, partial success at score 2.0 content but not at score 3.0 content</i></p> | |
| <p>Score 0.0</p> | <p>Even with help, no success</p> | |

OPERATIONS AND ALGEBRA

Multiplication and Division

Grade 7

| | | | |
|------------------|---|---|--|
| Score 4.0 | In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | | |
| | <i>Score 3.5</i> | <i>In addition to score 3.0 performance, partial success at score 4.0 content</i> | |
| Score 3.0 | <p>The student will:</p> <ul style="list-style-type: none"> • interpret the products and quotients of rational numbers in real-world contexts (7.NS.2a; 7.NS.2b) • apply properties of operations as strategies to multiply and divide rational numbers (7.NS.2c) • solve real-world and mathematical problems involving the multiplication and division of rational numbers (7.NS.3) | | <p>Sample Activities:</p> <p>A trail is 13.5 miles long. There are markers every 0.25 mile along the trail, including at the end of the trail. How many markers are there in all? Show your work.</p> <p>The three seventh grade classes at Mountainview Middle School collected the most boxtops for a school fundraiser, and so they won a \$600 prize to share among them. Mr. Haystead's class collected 3,760 box tops, Mrs. Schutz's class collected 2,301, and Mr. Pleis's class collected 1,855. How should they divide the money so that each class gets the same fraction of the prize money as the fraction of the box tops that they collected?</p> |
| | <i>Score 2.5</i> | <i>No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content</i> | |

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| Score 2.0 | <p>The student will recognize or recall specific vocabulary, such as:</p> <ul style="list-style-type: none"> • decimal, divide, division, divisor, integer, interpret, mathematical, multiplication, multiply, operation, product, property, quotient, rational number, real-world, repeating, strategy, terminating <p>The student will perform basic processes, such as:</p> <ul style="list-style-type: none"> • know that rational numbers must have a non-zero divisor (7.NS.2b) • apply properties of operations as strategies to multiplication and division with integers (7.NS.2c) • know rational numbers can be written as terminating or repeating decimals (7.NS.2d) | | <p>Sample Activities:</p> <p>identify or produce definitions to given terms.</p> <p>$-2(3-(-7))+18-(-3+5)=$</p> <p>Convert from rational to decimal. $15/9$</p> <p>Divide five by four. Is your answer a rational number? Explain.</p> |
| | Score 1.5 | <i>Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i> | |
| Score 1.0 | With help, partial success at score 2.0 content and score 3.0 content | | |
| | Score 0.5 | <i>With help, partial success at score 2.0 content but not at score 3.0 content</i> | |
| Score 0.0 | Even with help, no success | | |

OPERATIONS AND ALGEBRA

Expressions and Equations

Grade 7

| | | | |
|------------------|---|---|--|
| Score 4.0 | <p>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught.</p> | | |
| | Score 3.5 | <i>In addition to score 3.0 performance, partial success at score 4.0 content</i> | |

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| Score 3.0 | The student will: <ul style="list-style-type: none"> • apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients (7.EE.1) • rewrite expressions in different forms in a problem context to demonstrate how quantities are related (example: $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05”) (7.EE.2) | | Sample Activities: <p>Megan says that $-2(-10x-4)-4$ and $30x-22$ are equivalent. Do you agree?</p> <p>If $a=6x-5$ and $b=-8x+4$, what is the value of $a+b$?</p> <p>What is the factored form of $45x+20$?</p> <p>The students in Mr. Broderson’s class are converting distances measured in miles to kilometers. To estimate the number of kilometers, Janette takes the number of miles, doubles it, then subtracts 20% of the result. Jason first divides the number of miles by 5, then multiplies the result by 8.</p> <p>(a) Write an algebraic expression for each method.</p> <p>(b) Use your answer to part (a) to decide if the two methods give the same answer.</p> |
| | <i>Score 2.5</i> | <i>No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content</i> | |
| Score 2.0 | The student will recognize or recall specific vocabulary, such as: <ul style="list-style-type: none"> • add, coefficient, expand, expression, factor, linear, operation, property, quantity, rational, relate, strategy, subtract The student will perform basic processes, such as: <ul style="list-style-type: none"> • apply properties of operations to simplify linear expressions with rational coefficients | | Sample Activities: <p>identify or produce definitions to given terms.</p> <p>Why are the expressions $3(y-2)+2(y-2)$ and $5(y-2)$ equivalent? Justify your answer.</p> |
| | <i>Score 1.5</i> | <i>Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i> | |
| Score 1.0 | With help, partial success at score 2.0 content and score 3.0 content | | |
| | <i>Score 0.5</i> | <i>With help, partial success at score 2.0 content but not at score 3.0 content</i> | |
| Score 0.0 | Even with help, no success | | |

OPERATIONS AND ALGEBRA

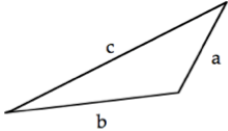

Equations and Inequalities

Grade 7

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| Score 4.0 | In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | | |
| | Score 3.5 | <i>In addition to score 3.0 performance, partial success at score 4.0 content</i> | |
| Score 3.0 | <p>The student will:</p> <ul style="list-style-type: none"> • solve multistep real-world and mathematical problems posed with rational numbers in any form (7.EE.3) • assess the reasonableness of answers using mental computation and estimation strategies (7.EE.3) • solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$ (7.EE.4a) • solve and graph word problems leading to inequalities of the form $px + q > r$ and $px + q < r$ (7.EE.4b) | | <p>Sample Activities:</p> <p>Amazon, iTunes, and Rhapsody are music companies. Amazon offers to buy 1.5 million shares of iTunes for \$561 million. At the same time, Rhapsody offers to buy 1.5 million shares of iTunes at \$373 per share. Who would get the better deal, Amazon or Rhapsody? What is the total price difference?</p> <p>Megan owes her parents \$54.</p> <p>She decides to pay this money back at \$6 each week. After some weeks she finds she has paid back \$6 too much. How long has she been paying the money back?</p> <p>Carla was given \$75 for a birthday present. This present, along with earnings from a summer job, is being set aside for a mountain bike. The job pays \$6 per hour, and the bike costs \$345. To be able to buy the bike, how many hours does Carla need to work?</p> <p>(Continuation) Let h be the number of hours that Carla works. What quantity is represented by the expression $6h$? What quantity is represented by the expression $6h+75$?</p> <p>(a) Graph the solutions to the inequality $6h+75 \geq 345$ on a number line.</p> <p>(b) Graph the solutions to the inequality $6h+75 < 345$ on a number line.</p> <p>(c) What do the solutions to the inequality $6h+75 \geq 345$ signify?</p> |
| | Score 2.5 | <i>No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content</i> | |

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| Score 2.0 | <p>The student will recognize or recall specific vocabulary, such as:</p> <ul style="list-style-type: none"> • computation, convert, decimal, equation, estimation, fraction, graph, inequality, integer, mathematical, mental, percent, rational number, real-world, reasonableness, strategy, word problem <p>The student will perform basic processes, such as:</p> <ul style="list-style-type: none"> • solve multistep real-world and mathematical problems posed with integers in any form (7.EE.3) • convert among fraction, decimal, and percent as appropriate (7.EE.3) | | <p>Sample Activities:</p> <p>identify or produce definitions to given terms.</p> <p>Bob is 57 years old. Bob has a son named Mark. In three years' time, Bob will be twice as old as Mark. How old is Mark?</p> |
| | Score 1.5 | <i>Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i> | |
| Score 1.0 | With help, partial success at score 2.0 content and score 3.0 content | | |
| | Score 0.5 | <i>With help, partial success at score 2.0 content but not at score 3.0 content</i> | |
| Score 0.0 | Even with help, no success | | |

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|------------------|--|---|
| GEOMETRY | | |
| Shapes | | |
| Grade 7 | | |
| Score 4.0 | In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | |
| | Score 3.5 | <i>In addition to score 3.0 performance, partial success at score 4.0 content</i> |

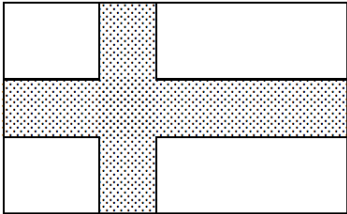
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| <p>Score 3.0</p> | <p>The student will:</p> <ul style="list-style-type: none"> • recognize that no triangle, a unique triangle, or multiple triangles can be formed from a given set of conditions (7.G.2) • describe the two-dimensional figures that result from slicing three-dimensional figures (7.G.3) | | <p>Sample Activities:</p> <p>Trudy uses metal rods to make triangular frameworks in which each side has a different length. She buys metal rods which have lengths 1 meter, 2 meters, 3 meters, etc. and she always keeps one rod of each length in stock.</p>  <p>This diagram shows one of Trudy's triangular frameworks.</p> <p>a, b, c are all integers and $c > b > a$.</p> <p>That is, c is the longest side, a is the shortest side and a, b, c are whole numbers.</p> <p>(a) How many different triangular frameworks can Trudy make which have a longest side 7 meters long, using the rods she has in stock? Show your work.</p> <p>(b) Investigate this situation for other values of c.</p> <p>(c) Write down any generalizations you can make.</p> <p>For the solid below, sketch two cross sections. One cross section should be parallel to the base, and the other perpendicular to the base. Identify each of the cross sections.</p>  |
| | <p>Score 2.5</p> | <p><i>No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content</i></p> | |
| <p>Score 2.0</p> | <p>The student will recognize or recall specific vocabulary, such as:</p> <ul style="list-style-type: none"> • condition, figure, geometric, multiple, set, slice, three-dimensional, triangle, two-dimensional, unique <p>The student will perform basic processes, such as:</p> <ul style="list-style-type: none"> • construct geometric figures with given conditions (7.G.2) | | <p>Sample Activities:</p> <p>identify or produce definitions to given terms.</p> <p>Megan dares David to draw a right equilateral triangle. After many hours of trying, David calls you and says, "I can't seem to figure it out, but I'm sure that if I keep drawing triangles I'll find one." What is the best geometrical advice that you can give to David? Explain.</p> |
| | <p>Score 1.5</p> | <p><i>Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i></p> | |

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|------------------|--|---|--|
| Score 1.0 | With help, partial success at score 2.0 content and score 3.0 content | | |
| | <i>Score 0.5</i> | <i>With help, partial success at score 2.0 content but not at score 3.0 content</i> | |
| Score 0.0 | Even with help, no success | | |

GEOMETRY

Area

Grade 7

| | | | |
|------------------|---|---|---|
| Score 4.0 | In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | | |
| | Score 3.5 | <i>In addition to score 3.0 performance, partial success at score 4.0 content</i> | |
| Score 3.0 | <p>The student will:</p> <ul style="list-style-type: none"> • use the formulas for the area and circumference of a circle to solve problems (7.G.4) • solve real-world and mathematical problems involving the area of two and three-dimensional shapes composed of triangles, quadrilaterals, polygons, cubes, and right prisms (7.G.6) | | <p>Sample Activities:</p> <p>A circle has an area of 32 square kilometers. What is the circumference of the circle?</p> <p>The diagram below shows the flag of Finland, which consists of a blue cross, whose width is a uniform 9 inches, against a solid white background. The flag measures 2 feet 9 inches by 4 feet 6 inches. The blue cross occupies what fractional part of the whole flag?</p>  |
| | Score 2.5 | <i>No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content</i> | |
| Score 2.0 | <p>The student will recognize or recall specific vocabulary, such as:</p> <ul style="list-style-type: none"> • area, calculate, circle, circumference, cube, formula, mathematical, polygon, quadrilateral, real-world, right prism, scale drawing, shape, three-dimensional, triangle, two-dimensional <p>The student will perform basic processes, such as:</p> <ul style="list-style-type: none"> • recognize or recall the formulas for the area and circumference of a circle • recognize or recall the formulas for the area of two and three-dimensional figures • calculate area using scale drawings (7.G.1) | | <p>Sample Activities:</p> <p>identify or produce definitions to given terms.</p> <p>Helen has an 80:1 scale drawing of the floor plan of her house. On the floor plan, the dimensions of her rectangular living room are 167 inches by 219 inches. What is the area of her real living room in square feet?</p> |

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|------------------|--|--|--|
| | Score 1.5 | <i>Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i> | |
| Score 1.0 | With help, partial success at score 2.0 content and score 3.0 content | | |
| | Score 0.5 | <i>With help, partial success at score 2.0 content but not at score 3.0 content</i> | |
| Score 0.0 | Even with help, no success | | |

GEOMETRY

Surface Area

Grade 7

| | | | |
|------------------|--|---|---|
| Score 4.0 | In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | | |
| | Score 3.5 | <i>In addition to score 3.0 performance, partial success at score 4.0 content</i> | |
| Score 3.0 | <p>The student will:</p> <ul style="list-style-type: none"> • solve real-world and mathematical problems involving the surface area of two- and three-dimensional shapes composed of triangles, quadrilaterals, polygons, cubes, and right prisms (7.G.6) | | <p>Sample Activities:</p> <p>Marianne is throwing a party, and she wants everything to be perfect. She has ordered tables that are 48 inches wide, 96 inches long, and 42 inches tall, and she wants the tablecloths to fall one inch from the floor.</p> <p>(a) What are the appropriate tablecloth dimensions? (b) What is the total surface area of each tablecloth?</p> |
| | Score 2.5 | <i>No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content</i> | |
| Score 2.0 | <p>The student will recognize or recall specific vocabulary, such as:</p> <ul style="list-style-type: none"> • compose, cube, figure, mathematical, polygon, quadrilateral, real-world, right prism, surface area, three-dimensional, triangle, two-dimensional <p>The student will perform basic processes, such as:</p> <ul style="list-style-type: none"> • recognize or recall the formulas for the surface area of two- and three-dimensional figures | | <p>Sample Activities:</p> <p>identify or produce definitions to given terms.</p> <p>Identify or produce the formulas for the surface area of two- and three-dimensional figures</p> |
| | Score 1.5 | <i>Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i> | |
| Score 1.0 | With help, partial success at score 2.0 content and score 3.0 content | | |
| | Score 0.5 | <i>With help, partial success at score 2.0 content but not at score 3.0 content</i> | |
| Score 0.0 | Even with help, no success | | |

GEOMETRY

Volume

Grade 7

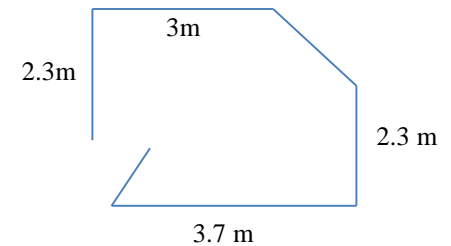
| | | | |
|------------------|---|---|---|
| Score 4.0 | In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | | |
| | Score 3.5 | <i>In addition to score 3.0 performance, partial success at score 4.0 content</i> | |
| Score 3.0 | The student will: <ul style="list-style-type: none"> • solve real-world and mathematical problems involving the volume of two- and three-dimensional shapes composed of triangles, quadrilaterals, polygons, cubes, and right prisms (7.G.6) | | Sample Activities: Tony is flying to visit friends for the holidays, and he decides to pick up some chocolates as a gift. Tony is choosing between two bars. One, called Toblerone, is an equilateral triangular prism one inch on a side and eight inches long. The other bar is a square prism with the same edge lengths. What is the difference in the total volume of chocolate contained? |
| | Score 2.5 | <i>No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content</i> | |
| Score 2.0 | The student will recognize or recall specific vocabulary, such as: <ul style="list-style-type: none"> • compose, cube, formula, mathematical, real-world, right prism, shape, three-dimensional, volume The student will perform basic processes, such as: <ul style="list-style-type: none"> • recognize or recall the formulas for volume of cubes and right prisms | | Sample Activities: identify or produce definitions to given terms. Identify or produce the formulas for volume of cubes and right prisms |
| | Score 1.5 | <i>Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i> | |
| Score 1.0 | With help, partial success at score 2.0 content and score 3.0 content | | |
| | Score 0.5 | <i>With help, partial success at score 2.0 content but not at score 3.0 content</i> | |
| Score 0.0 | Even with help, no success | | |

GEOMETRY

Scale Drawings

Grade 7

| | | | |
|------------------|--|---|---|
| Score 4.0 | In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | | |
| | Score 3.5 | <i>In addition to score 3.0 performance, partial success at score 4.0 content</i> | |
| Score 3.0 | The student will: <ul style="list-style-type: none"> reproduce a scale drawing at a different scale (7.G.1) | | Sample Activities: Jason draws this sketch of his bedroom. a. Draw a plan of the room using a scale of 1:50 |
| | Score 2.5 | <i>No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content</i> | |
| Score 2.0 | The student will recognize or recall specific vocabulary, such as: <ul style="list-style-type: none"> distance, real, scale, scale drawing The student will perform basic processes, such as: <ul style="list-style-type: none"> compute real distances from a scale drawing (7.G.1) | | Sample Activities: identify or produce definitions to given terms. A Florida map has a scale of 1 inch = 22.8 miles. If the distance on the map between Vero Beach and Boynton beach is 3.5 inches, what is the actual distance? |
| | Score 1.5 | <i>Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i> | |
| Score 1.0 | With help, partial success at score 2.0 content and score 3.0 content | | |
| | Score 0.5 | <i>With help, partial success at score 2.0 content but not at score 3.0 content</i> | |
| Score 0.0 | Even with help, no success | | |



GEOMETRY

Angles

Grade 7

Score 4.0 In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught.

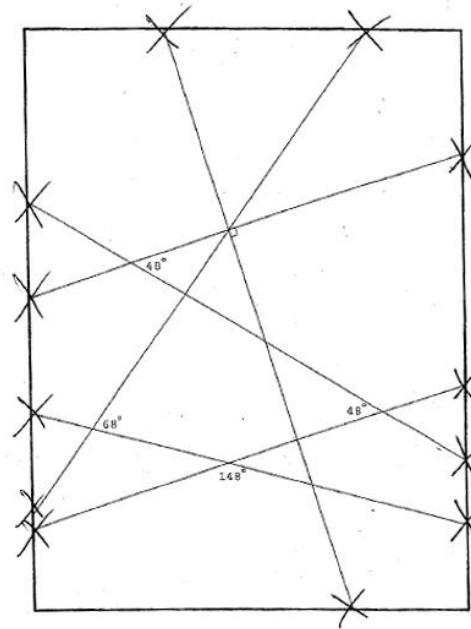
Score 3.5 *In addition to score 3.0 performance, partial success at score 4.0 content*

Score 3.0 **The student will:**

- use facts about supplementary, complementary, vertical, and adjacent angles in a multistep problem to write and solve simple equations for an unknown angle in a figure (7.G.5)

Sample Activities:

Find all missing angles. You can't find angles that touch borders.



Score 2.5 *No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content*

| | | |
|------------------|--|---|
| Score 2.0 | <p>The student will recognize or recall specific vocabulary, such as:</p> <ul style="list-style-type: none"> • adjacent, angle, angle, complementary, equation, fact, feature, figure, simple, supplementary, unknown, vertical <p>The student will perform basic processes, such as:</p> <ul style="list-style-type: none"> • recognize or recall the features of complementary, supplementary, vertical, and adjacent angles | <p>Sample Activities:</p> <p>identify or produce definitions to given terms.</p> <p>Answer multiple choice or fill in the blank type questions about the features of complementary, supplementary, vertical, and adjacent angles</p> |
| | <p><i>Score 1.5 Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i></p> | |
| Score 1.0 | With help, partial success at score 2.0 content and score 3.0 content | |
| | <p><i>Score 0.5 With help, partial success at score 2.0 content but not at score 3.0 content</i></p> | |
| Score 0.0 | Even with help, no success | |

MEASUREMENT, DATA, STATISTICS, AND PROBABILITY

Data Distributions

Grade 7

| | | |
|-------------------------|--|---|
| <p>Score 4.0</p> | <p>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught.</p> | |
| | <p>Score 3.5 <i>In addition to score 3.0 performance, partial success at score 4.0 content</i></p> | |
| <p>Score 3.0</p> | <p>The student will:</p> <ul style="list-style-type: none"> • use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations (7.SP.4) | <p>Sample Activities:</p> <p>Ms. R is a medical researcher who is curious about the effect of caffeine on length of sleep. Ms. R randomly selects ten people who consume caffeine and 10 people who do not and has them record their hours of sleep each night for a week, yielding the nightly averages below. Based on the center and variability of each distribution, what inferences can you draw about the two populations?</p> <div style="text-align: center;"> <p>No Caffeine</p> <p>Hours per night</p> </div> <div style="text-align: center; margin-top: 20px;"> <p>Caffeine</p> <p>Hours per night</p> </div> |
| | <p>Score 2.5 <i>No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content</i></p> | |

| | | |
|------------------|---|---|
| Score 2.0 | <p>The student will recognize or recall specific vocabulary, such as:</p> <ul style="list-style-type: none"> • assess, center, comparative, data, degree, distribution, inference, informal, measure, numerical, overlap, population, random sample, variability, visual <p>The student will perform basic processes, such as:</p> <ul style="list-style-type: none"> • informally assess the degree of visual overlap of two numerical data distributions (7.SP.3) | <p>Sample Activities:</p> <p>Identify or produce definitions to given terms.</p> <p>A video game company recruits twenty customers to give it feedback on a game that it is developing. The company gives ten of the customers Version A of the game and the other ten Version B. Then, the company monitors how many hours the members of the two groups play over the course of a week, yielding the results below. Use measures of center and variability to compare the customer responses to Version A and Version B.</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p>Version A</p> </div> <div style="text-align: center;"> <p>Version B</p> </div> </div> |
| | <p><i>Score 1.5 Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i></p> | |
| Score 1.0 | <p>With help, partial success at score 2.0 content and score 3.0 content</p> | |
| | <p><i>Score 0.5 With help, partial success at score 2.0 content but not at score 3.0 content</i></p> | |
| Score 0.0 | <p>Even with help, no success</p> | |

MEASUREMENT, DATA, STATISTICS, AND PROBABILITY

Random Sampling

Grade 7

Score 4.0 In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught.

Score 3.5 *In addition to score 3.0 performance, partial success at score 4.0 content*

Score 3.0 **The student will:**

- recognize that different random samples from a population may yield different inferences (7.SP.1)
- draw inferences about a population using data from a random sample (7.SP.2)
- analyze variation of multiple samples (7.SP.2)

Sample Activities:

Ms. Simms decides that she is going to call a sample of her students to see if they feel ready for the upcoming test. Ms. Simms writes all of their names on slips of paper, throws the papers in the air, and grabs a few pieces of paper as they flutter to the ground. Is Ms. Simms' sample likely to be biased?

Below is the data collected from a random sample of 100 graduating seniors on the number of college applications they submitted in their senior year. What inferences would you draw about the senior class as a whole?

Fred is working in marketing at Apple, and he is interested in why people are buying the iPhone 5. He decides to take a random sample of iPhone 5 users, yielding the following results:

| | Sample 1 | Sample 2 |
|---------------|----------|----------|
| Thinner | 20 | 18 |
| Bigger Screen | 28 | 34 |
| Better Camera | 18 | 12 |
| Status Symbol | 2 | 4 |
| Speed | 32 | 32 |
| Total | 100 | 100 |

- (a) What are the most striking examples of variation between samples?
- (b) For the categories that show notable variation, what value would you expect to see in a perfectly representative sample of the same size?
- (c) How should Fred summarize the data in an email to his co-workers?

Score 2.5 *No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content*

| | | | |
|------------------|--|--|--|
| Score 2.0 | <p>The student will recognize or recall specific vocabulary, such as:</p> <ul style="list-style-type: none"> • analyze, data, estimate, gauge, generate, inference, population, prediction, random sampling, reasonable, sample, size, variation <p>The student will perform basic processes, such as:</p> <ul style="list-style-type: none"> • recognize reasonable inferences about a population • generate multiple samples of the same size to gauge the variation in estimates or predictions (7.SP.2) | | <p>Sample Activities:</p> <p>identify or produce definitions to given terms.</p> <p>Conduct a survey among classmates about their favorite type of candy. Develop 4 different samples of the same size. Chart the results</p> |
| | <i>Score 1.5</i> | <i>Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i> | |
| Score 1.0 | With help, partial success at score 2.0 content and score 3.0 content | | |
| | <i>Score 0.5</i> | <i>With help, partial success at score 2.0 content but not at score 3.0 content</i> | |
| Score 0.0 | Even with help, no success | | |

MEASUREMENT, DATA, STATISTICS, AND PROBABILITY

Probability

Grade 7

Score 4.0 In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught.

Score 3.5 *In addition to score 3.0 performance, partial success at score 4.0 content*

Score 3.0 **The student will:**

- develop a probability model and use it to find probabilities of events (7.SP.7)
- compare probabilities from a model to observed frequency and reason about differences between the model and observed frequency (7.SP.7)
- find probabilities of compound events using organized lists, tables, tree diagrams, and simulation (7.SP.8)

Sample Activities:

Megan is an amateur magician performing a card trick. She has an audience member pick a card at random from the deck, and he has the rest of the audience guess what the card is. Suppose that Megan is using a standard deck (shown below).

| Clubs | Diamonds | Hearts | Spades |
|-------|----------|--------|--------|
| Ace | Ace | Ace | Ace |
| King | King | King | King |
| Queen | Queen | Queen | Queen |
| Jack | Jack | Jack | Jack |
| 10 | 10 | 10 | 10 |
| 9 | 9 | 9 | 9 |
| 8 | 8 | 8 | 8 |
| 7 | 7 | 7 | 7 |
| 6 | 6 | 6 | 6 |
| 5 | 5 | 5 | 5 |
| 4 | 4 | 4 | 4 |
| 3 | 3 | 3 | 3 |
| 2 | 2 | 2 | 2 |

What is the probability of each of the following guesses?

- (a) 2 of Clubs
- (b) King of Spades
- (c) 7
- (d) Face card (Jack, Queen, King or Ace)
- (e) Numbered Card

Suppose each box of a popular brand of cereal contains a pen as a prize. The pens come in four colors, blue, red, green and yellow. Each color of pen is equally likely to appear in any box of cereal. Design and carry out a simulation to help you answer each of the following questions.

- (a) What is the probability of having to buy at least five boxes of cereal to get a blue pen? What is the mean (average) number of boxes you would have to buy to get a blue pen if you repeated the process many times?
- (b) What is the probability of having to buy at least ten boxes of cereal to get a full set of pens (all four colors)? What is the mean (average) number of boxes you would have to buy to get a full set of pens if you repeated the process many times?

| | Score 2.5 | No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content | | | | | | | | | | | | | | | | |
|-----------|---|--|--|------------------------|------------|--------------------|-----------------------|------------------------|------|--|--|--|--|--------|--|--|--|--|
| Score 2.0 | <p>The student will recognize or recall specific vocabulary, such as:</p> <ul style="list-style-type: none"> chance process, compound event, data, event, frequency, likelihood, list, model, observed, organize, predict, probability, reason, simulation, table, tree diagram (7.SP.5) <p>The student will perform basic processes, such as:</p> <ul style="list-style-type: none"> collect data on a chance process and predict probability (7.SP.6) | | <p>Sample Activities:</p> <p>identify or produce definitions to given terms.</p> <p>Look the shirt you are wearing today, and determine how many buttons it has. Then complete the following table for all the members of your class.</p> <table border="1"> <thead> <tr> <th></th> <th>No Buttons</th> <th>One or Two Buttons</th> <th>Three or Four Buttons</th> <th>More Than Four Buttons</th> </tr> </thead> <tbody> <tr> <th>Male</th> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>Female</th> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Suppose each student writes his or her name on an index card, and one card is selected randomly.</p> <p>(a) What is the probability that the student whose card is selected is wearing a shirt with no buttons?</p> <p>(b) What is the probability that the student whose card is selected is female and is wearing a shirt with two or fewer buttons?</p> | | No Buttons | One or Two Buttons | Three or Four Buttons | More Than Four Buttons | Male | | | | | Female | | | | |
| | No Buttons | One or Two Buttons | Three or Four Buttons | More Than Four Buttons | | | | | | | | | | | | | | |
| Male | | | | | | | | | | | | | | | | | | |
| Female | | | | | | | | | | | | | | | | | | |
| | Score 1.5 | Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content | | | | | | | | | | | | | | | | |
| Score 1.0 | With help, partial success at score 2.0 content and score 3.0 content | | | | | | | | | | | | | | | | | |
| | Score 0.5 | With help, partial success at score 2.0 content but not at score 3.0 content | | | | | | | | | | | | | | | | |
| Score 0.0 | Even with help, no success | | | | | | | | | | | | | | | | | |