

SELECTED SOLUTIONS AND COMMENTS FOR TASKS

Grade 6 - Algebra, Geometry, Statistics

Tasks are intended to serve different purposes. When appropriate, students are encouraged to make choices, think strategically, and explain their reasoning. This document contains answers to selected problems. When answers vary, we try to offer an example when possible. When not possible, we describe what a student response could look like. The solutions in this document are not meant to represent an exhaustive list of suitable answers.

My Menu (algebra/expressions and equations)	
	Answers will vary.

Building A House (geometry, measurement, scale, percent)	
Part 1	<p>Answers may vary.</p> <p>In the diagram below, each linear unit represents 1 yard. The outer lot is 20 yards by 30 yards, and the shaded area represents Sarah's house. Notice there is a 4 yard (12 foot) border around her land that the house does not touch.</p> <p>Since Sarah's house is going to be 1800 square feet, but her lot is measured in yards, we can convert 1800 square feet into 200 square yards (since there are 9 square feet in each square yard). If we limit ourselves to whole yard dimensions, Sarah's house could have dimensions of 10 yards by 20 yards or 25 yards by 8 yards. The 10 yard by 20 yard house is shown below.</p> <div style="text-align: center;"> </div>
Part 2	<p>Sarah's house covers 200 square yards of the total 600 square yards. That is one-third of her land, which is less than 40% of her land. Sarah's house meets the regulation.</p>
Part 3	<p>To cover 40% of the land, Sarah's house would cover 40% of 600 square yards, or 240 square yards. To stay at least 4 yards from the perimeter of her property, the dimensions of her house must be less than 22 yards long and 12 yards wide. Possible dimensions for Sarah's largest possible home include 20 yards by 12 yards.</p>

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Area Challenge (geometry/area)

There are multiple ways to find the area of each figure. One method is to dissect each into other familiar shapes and find the sum of all the parts' areas. A second method is to surround the figure in another polygon (typically a rectangle) and subtract away the "excess" parts to leave the original figure.

See the figures below. For Figure A, consider the pentagon is made up of a rectangle and triangle. The area of the rectangle is 20 sq. units and the area of the triangle is 6 sq. units. So Figure A has an area of 26 sq. units.

Figure B's area might be most easily calculated by enclosing it in a rectangle of area 48 sq. units. Then subtract away the upper triangle, lower rectangle, and two middle triangles of areas 3, 8, 4 and 4 square units respectively. This leaves an area of 29 square units.

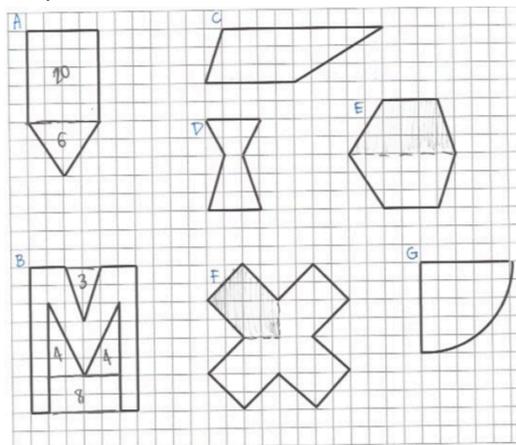
Figure C has an area of 21 square units.

Figure D has an area of 10 square units.

Figure E has an area of 27 square units. Consider finding the area of the top half and doubling.

Figure F has an area of 40 square units.

Figure G has an area of $\frac{25}{4}\pi$ square units; it is one-fourth of a circle of radius 5.



Packing Baseballs (geometry/surface area)

Answers may vary. Box sizes should be small enough to carry and not too heavy.

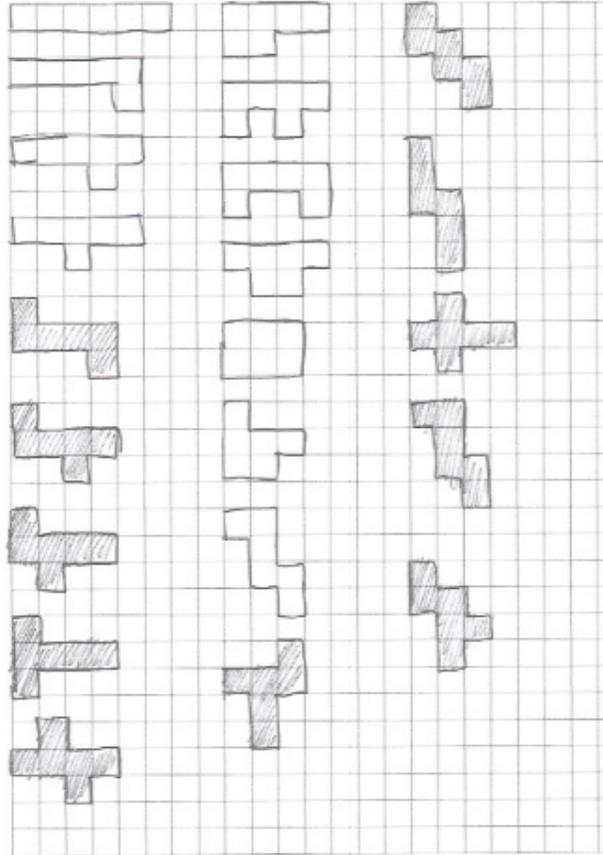
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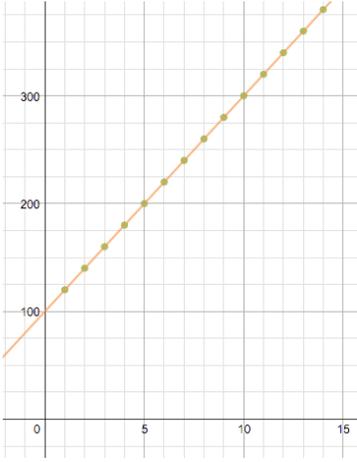
Making Nets for Cubes (geometry/surface area)

See the figure below for some possible drawings. There are 11 possible nets that will actually form a cube, and all 11 are shown below.



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Greg's Savings Plan (tables, equations, graphs, ratios)																																		
1	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">Number of Months</th> <th style="padding: 5px;">Total Saved in Dollars</th> </tr> </thead> <tbody> <tr><td style="padding: 5px;">0</td><td style="padding: 5px;">100</td></tr> <tr><td style="padding: 5px;">1</td><td style="padding: 5px;">120</td></tr> <tr><td style="padding: 5px;">2</td><td style="padding: 5px;">140</td></tr> <tr><td style="padding: 5px;">3</td><td style="padding: 5px;">160</td></tr> <tr><td style="padding: 5px;">4</td><td style="padding: 5px;">180</td></tr> <tr><td style="padding: 5px;">5</td><td style="padding: 5px;">200</td></tr> <tr><td style="padding: 5px;">6</td><td style="padding: 5px;">220</td></tr> <tr><td style="padding: 5px;">7</td><td style="padding: 5px;">240</td></tr> <tr><td style="padding: 5px;">8</td><td style="padding: 5px;">260</td></tr> <tr><td style="padding: 5px;">9</td><td style="padding: 5px;">280</td></tr> <tr><td style="padding: 5px;">10</td><td style="padding: 5px;">300</td></tr> <tr><td style="padding: 5px;">11</td><td style="padding: 5px;">320</td></tr> <tr><td style="padding: 5px;">12</td><td style="padding: 5px;">340</td></tr> <tr><td style="padding: 5px;">13</td><td style="padding: 5px;">360</td></tr> <tr><td style="padding: 5px;">14</td><td style="padding: 5px;">380</td></tr> </tbody> </table>	Number of Months	Total Saved in Dollars	0	100	1	120	2	140	3	160	4	180	5	200	6	220	7	240	8	260	9	280	10	300	11	320	12	340	13	360	14	380	
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	<p>At the beginning of the 7th month, Greg can buy the camera. Then after another 7 months he can buy the printer.</p> <p>The graph at the right shows Greg's progress in saving.</p> <p>The ordered pairs in the table do not represent equivalent ratios.</p> <p>The independent variable is number of months, and the dependent variable is amount saved.</p>																																	
2	<p>Answers may vary.</p> <p>Greg will be able to purchase the printer sooner, but will take until month 14 to make his second purchase. The graph and table will be the same as above.</p>																																	

Painting Marco's and Rocky's Rooms (area; measurement; rates; percent)	
	Answers may vary.

Conduct a Survey (statistics)	
	Answers may vary.