

Learn at Home

INTERMEDIATE

Math Kit

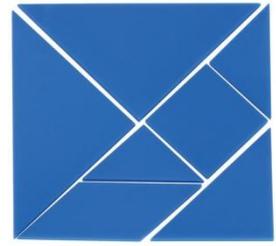


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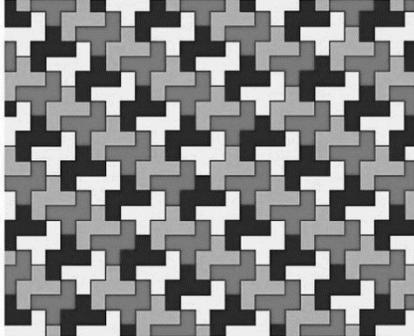
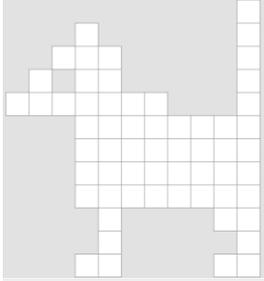
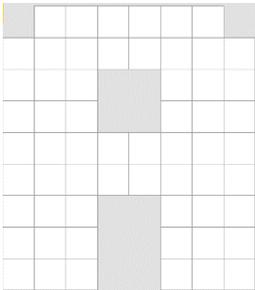


Intermediate Tasks	Algebra Tiles (35 pcs)															
<p>1 Modeling Equations</p>	<p>Use the algebra tiles to solve $2x+3 = 4x-3$.</p> <p>Model the equation first and then solve for x.</p> <p>Remember the rule about the “zero” pairs</p> <div style="display: flex; align-items: center; gap: 10px;"> <div style="border: 1px solid black; padding: 2px;"> <div style="background-color: red; color: white; padding: 2px 5px;">1</div> <div style="background-color: blue; color: white; padding: 2px 5px;">-1</div> </div> <div style="border: 1px solid black; padding: 2px;"> <div style="background-color: red; color: white; padding: 2px 10px;">x</div> <div style="background-color: blue; color: white; padding: 2px 10px;">-x</div> </div> </div>															
<p>2 Solving for x</p>	<p>One less than two times a number is equal to three more than the number.</p> <p>Let x represent the number.</p> <p>Model the equation with the algebra tiles and then solve for x.</p>															
<p>3 Three Numbers</p>	<p>The sum of three consecutive numbers is 63.</p> <p>Write an equation you could use to solve this problem. Model this with algebra tiles.</p> <p>Solve the equation. What are the three numbers?</p>															
<p>4 Modelling to Solve</p>	<p>Five times a number is equal to two more than three times a number.</p> <p>Let x represent the number.</p> <p>Model the equation with algebra tiles and then solve for x.</p>															
<p>5 What's the Equation?</p>	<div style="display: flex; align-items: center; justify-content: center; gap: 20px;"> <table border="1" style="border-collapse: collapse;"> <tr> <td style="background-color: red; color: white; text-align: center; padding: 5px;">x</td> <td colspan="4"></td> </tr> <tr> <td style="background-color: red; color: white; text-align: center; padding: 5px;">x</td> <td style="background-color: blue; color: white; text-align: center; padding: 5px;">-1</td> <td style="background-color: blue; color: white; text-align: center; padding: 5px;">-1</td> <td style="background-color: blue; color: white; text-align: center; padding: 5px;">-1</td> <td style="background-color: blue; color: white; text-align: center; padding: 5px;">-1</td> </tr> <tr> <td style="background-color: red; color: white; text-align: center; padding: 5px;">x</td> <td style="background-color: blue; color: white; text-align: center; padding: 5px;">-1</td> <td style="background-color: blue; color: white; text-align: center; padding: 5px;">-1</td> <td style="background-color: blue; color: white; text-align: center; padding: 5px;">-1</td> <td style="background-color: blue; color: white; text-align: center; padding: 5px;">-1</td> </tr> </table> = <div style="border: 1px solid black; padding: 5px; background-color: blue; color: white; text-align: center;">-x</div> </div> <p>What equation does this represent?</p> <p>Then solve for x.</p>	x					x	-1	-1	-1	-1	x	-1	-1	-1	-1
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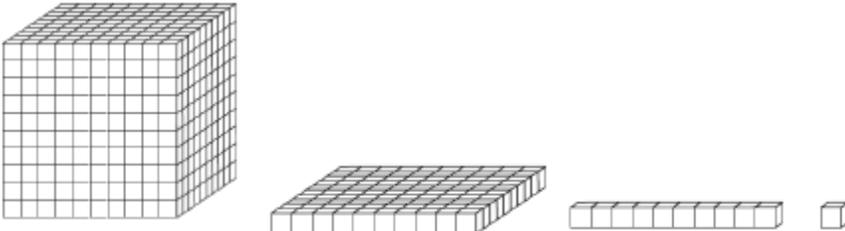
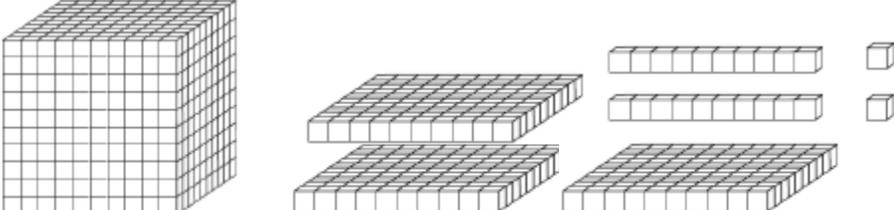
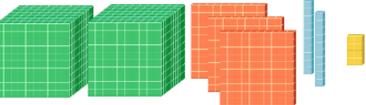


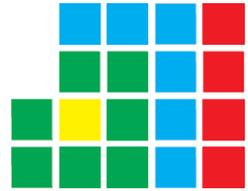
Intermediate Tasks	Tangrams (7 pcs per set) Assorted Colour- No colour choice
1 Tangram Puzzle	<p>Build the following design using all the tangram pieces.</p> 
2 Tangram Puzzle	<p>Build the following design using all the tangram pieces</p> 
3 Tangram Puzzle	<p>Build the following design using all the tangram pieces</p> 
4 Tangram Challenge	<p>Try and build a square, triangle, trapezoid, parallelogram and pentagon with 1, 2, 3, 4, 5, 6, and all 7 pieces.</p> <p>See how many you can solve, not all may be possible!</p>
5 Puzzle Challenge	<p>Arrange the tangrams such that they make 1 large square all together.</p> <p>What fraction of the whole square does the small triangle represent?</p>

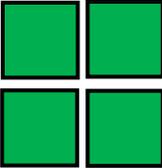


Intermediate Tasks	Pentominoes (12 pieces per set) Assorted Colour- No colour choice
1 Similar Shapes	<p>Choose one of the pentominoes as your target shape.</p> <p>Use some or all of the pentominoes in the set to create the same shape as your chosen pentomino that is 2 times as large or 3 times as large.</p>
2 Making Rectangles	<p>Using 3 pentomino pieces - can you make a rectangle? Try again using 4, then 5, then 6, 7, 8, 9, 10, 11 and 12.</p>
3 Tessellation	<p>Use your pentominoes to help you create a tessellation design. Describe the transformations required to create your tessellation.</p> 
4 Pentomino Puzzle	<p>Create this dog image with all 12 pieces of your pentomino.</p> 
5 Pentomino Puzzle	<p>Can you use all of your pentomino pieces to make this puzzle?</p> 



Intermediate Tasks	Base Ten & Mat
<p>1 How Much Is It?</p>	<p>If the 1000 cube represents one, what do each of the other base-ten blocks represent?</p> 
<p>2 Representing Decimals</p>	<p>Using base ten blocks, can you show 3 decimals that are between 1.1 and 1.2?</p>
<p>3 Mystery Number</p>	<p>What number would this represent, if the largest cube is one whole.</p>  <p>Build the number that is 0.002 greater.</p> <p>Build the number that is 0.02 greater than the original.</p> <p>Building the number that is 0.2 smaller than the original.</p>
<p>4 Smaller Than One</p>	<p>What number would this represent, if the largest cube is one whole.</p>  <p>Build the number that is 0.005 greater.</p> <p>Build the number that is 0.05 greater than the original.</p> <p>Building the number that is 0.5 smaller than the original.</p>
<p>5 Using Base-Ten Blocks for Multiplication</p>	<p>Use the base ten blocks to help you represent 2.457×3</p> <p>What would it look like?</p> <p>Then solve for the product.</p>



Intermediate Tasks	Coloured Tiles (40 pcs)
<p>1 Integer Equation</p>	<p>___ + (-6) = ___</p> <p>Choose 10 two colours of tiles - one to represent positive integers and one to represent negative integers.</p> <p>Using all 10 tiles for the first number, how many different equations can you create?</p> <p>Solve your questions.</p>
<p>2 Building Squares</p>	<p>Build as many squares as you can using the colour tiles.</p>  <p>What are the dimensions of the squares? How many tiles do you need for each?</p> <p>What do you notice about the number of tiles?</p>
<p>3 Linear Growing Patterns</p>	<p>Represent a linear growing pattern that has the pattern rule, total number of tiles = $3x+4$ in two different ways.</p>
<p>4 Planting a Garden</p>	 <p>You want to plant a garden in your backyard.</p> <p>$\frac{2}{3}$ of your backyard will be taken up by a new vegetable garden and $\frac{1}{4}$ of the vegetable garden will be herbs.</p> <p>How much of the back yard will be taken up by herbs?</p> <p>Hint: Think of building an array</p>
<p>5 Colourful Rectangles</p>	<p>Build a rectangle that is $\frac{1}{2}$ yellow, $\frac{1}{5}$ green, $\frac{1}{10}$ blue and the rest red.</p> <p>What fractional part is red?</p>

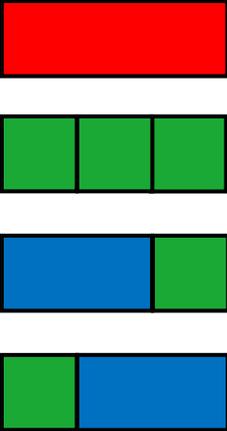


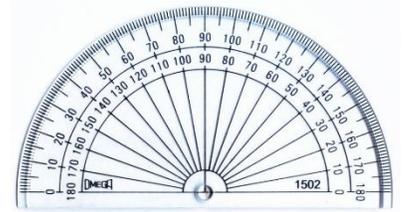
Intermediate Tasks	Two-Colour Counters (50 pcs)
1 Representing Integers	Represent -3 in three different ways with the two-sided counters.
2 Magic Square	<p>Complete the magic square. Every row and column and diagonal have the same sum.</p> <p>(+ ○ , - ●)</p>
3 Integer Division	Model the division of two negative integers that are both greater than -100?
4 Ratios	Use the 2 coloured counters to model the ratio 3:5 in a variety of ways.
5 What Number Is It?	Put 25 counters in a bag. Reach in and pull out a small handful. Gently toss them into the air. Determine, based on how they land, the integer represented.

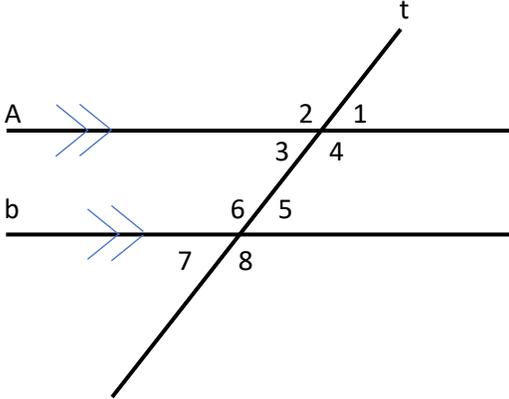


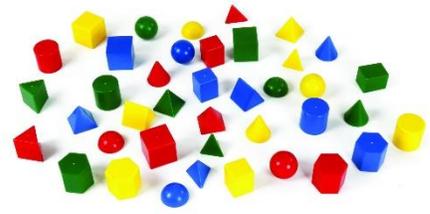
Intermediate Tasks	Linking Cubes (50 pcs)
<p>1 Towers</p>	<p>Build some linking cube trains/towers using only 3 cubes of 2 different colours.</p> <p>What are all the different train variations that you can make?</p> <p>When you think you have them all, can you display your thinking in a tree diagram.</p> <p>What are all the different trains you can make for 4 cubes or 5 cubes?</p>
<p>2 Painted Cube</p>	<p>Imagine that we paint a 4 x 4 x 4 cube blue on every side.</p> <p>How many of the small cubes have 3 blue faces?</p> <p>How many have 2 blue faces?</p> <p>How many have 1 blue face?</p> <p>How many have not been painted at all?</p> <p>How many faces would be painted in a cube of any size? Think visually!</p> <div style="text-align: center;"> </div>
<p>3 Building Structures</p>	<p>Create a structure with 25 cubes.</p> <p>Find the fractional, decimal and percent amount that each colour represents within the whole structure.</p>
<p>4 The Golden Ratio</p>	<p>How many rectangular prism structures can you make that have a height of 4 and a perimeter of 24 on the base?</p> <p>Calculate the surface area of the 4 sides of each rectangular prism (do not include the area of the base and top in this).</p> <p>What do you notice about the surface areas? Why is this so?</p>
<p>5 Golden Ratio</p>	<p>How many rectangular prism structures can you make that have a height of 4 and a perimeter of 24 on the base?</p> <p>Calculate the surface area of the 4 sides of each rectangular prism (do not include the area of the base and top in this).</p> <p>What do you notice about the surface areas? Why is this so?</p>

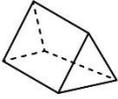
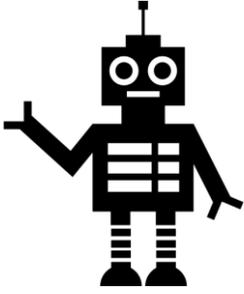
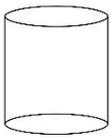


Intermediate Tasks	Deci-rods (Relational Rods) 80 pcs
<p>1 Representing Fractions</p>	<p>Choose a fraction.</p> <p>Using the rods, model the fractions in as many ways as you can.</p> <p>Justify your work.</p> <p>Is there always more than one way to model a fraction? Why or why not?</p>
<p>2 Making Rod Trains</p>	<p>Find out how many different rod trains can be made from any length of rod.</p> <p>For example, you can make these 4 trains for the green rod or 3rd rod.</p> <div style="text-align: center;">  </div> <p>What do you notice? What do you wonder?</p>
<p>3 Staircase</p>	<p>Build a staircase with your relational rods. What is the total volume?</p> <p>Determine the volume if there are 100 steps.</p>
<p>4 Creating a Pattern</p>	<p>Create a glowing pattern. Extend the pattern. Develop a rule for the pattern.</p>
<p>5 Building Rods</p>	<p>Combine two rods (the pink and white rod) end to end to form a longer rod segment.</p> <p>Using the rods, make all one colour combinations that will match the length of the “new” rod.</p> <p>Assuming this new rod represents one whole unit. For each other one colour combinations, find the fractional parts of a single rod in relation to the “new” whole. Record the color of each rod and its fractional amount.</p> <p>Then find all the fractional values of each of the remaining rods, with the “new” whole. Add these findings to the data you have already collected and arrange them in order from least to greatest.</p> <p>Do you notice any patterns in the table? Explain.</p>

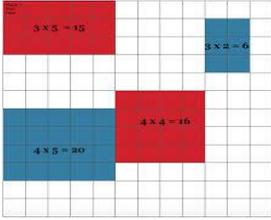


Intermediate Tasks	Protractor
1 Designing	Create a design that has at least 4 obtuse angles, 4 acute angles, 2 reflex angles and 1 right angle.
2 Constructing Triangles	<p>Draw a triangle that has an angle of 52 degrees and one of 95 degrees.</p> <p>What type of triangle is this?</p>
3 Tangram Angles	<p>Use your protractor to measure all the angles within your set of tangrams.</p> <p>What do you notice about the angles in each of the tangram pieces?</p>
4 Angles and Parallel Lines	<p>Draw a set of parallel lines with a line segment that crosses both lines at a 45-degree angle.</p>  <p>Measure all the angles. Describe the patterns that you notice.</p>
5 Drawing Shapes	Create an irregular pentagon that has 2 pairs of equal angles.



Intermediate Tasks	Geometric Solids (10 pcs per set) Assorted Colour- No colour choice
1 The Largest	Using the 3D prism shapes, determine which one has the largest surface area? volume?
2 Relationships	<p>How is the volume of a cylinder relation to the volume of a triangular prism?</p>  <p>How are these volumes different?</p>
3 Robots	<p>Create a robot out of 3D shapes.</p> <p>Calculate the amount of metal that would be required to build the robot.</p> 
4 Nets	Use the 3D shapes to create the nets in order to reconstruct the shapes.
5 Examining Cylinders	 <p>Looking at the cylinder, and perhaps other cylinder-shaped items at home.</p> <p>What do you notice about the length of the diameter and the circumference?</p> <p>Do you think this is always true?</p>



Intermediate Tasks	Dices (dots 1-6), (Numbered 1-12) & (Numbered 1-20) Total 6 pcs)
1 Boxed Out	<p>Players: 2 Materials Needed: 2 dice, graph paper, a coloured pencil or crayon for each player, paper (for totaling scores)</p> <p>Object: Cover the largest area by placing rectangles on graph paper</p> <p>How to Play:</p> <ul style="list-style-type: none"> • Players alternate turns. • On a turn, a player rolls two dice and draws a rectangle using the numbers rolled as the length and width on graph paper. For example, if the numbers rolled are 2 and 3, the player draws a 2 by 3 array. • Play continues until a player can't place a rectangle. Both players add the areas of all of their rectangles, and the highest score wins. 
2 Greater Products	<p>Materials Needed: 3 dice, Paper and pen for scoring</p> <ul style="list-style-type: none"> • Have each player roll one die. The player with the highest number goes first. • Each player in turn rolls all three of the dice. After the first throw, remove the die with the highest number and put it aside. • Roll the two remaining dice and again put the highest number aside. Sum the first and second dice • Roll the last die and multiply the sum of the first two dice by the third dice. • Record the score on a pad of paper. • Continue taking turns moving clockwise around the table until all players have had a turn. The highest score for the round wins. • Play a number of rounds and either add up a combined score at the end or tally winning rounds to come up with a game champion.
3 Luck of the Roll	<p>Players: 2 or more Materials Needed: 5 dice → 4 number dice one operation dice Roll all 4 number dice and create 2 numbers anyway you want with the four numbers rolled. Then roll the operation dice. Complete the operation with the 2 numbers you formed. After 4 rounds whomever has a score closest to 100 wins</p>
4 Pig (Modified)	<p>Players: 2 Materials: 1 or 2 dice (feel free to your use fraction dice for an added challenge) Object: Be the first player to reach 1000</p> <p>One Die Version: On a turn, a player can roll repeatedly until one of two things happens (1) the player rolls a 1 or (2) the player chooses to hold (stop rolling). Each number rolled is multiplied to the player's total. If a 1 is rolled, all points for that turn are lost!</p> <p>Scoring examples:</p> <ol style="list-style-type: none"> 1. Suzy rolls a 4 and decides to continue. She then rolls 5 more times (3, 4, 2, 6, 1). Because she rolled a 1, her turn ends and she receives no points for the numbers rolled. 2. Marcus rolls a 6 and decides to continue. He rolls 3 more times (4, 3, 5) and decides to hold. His score for the round is 360 (6 x 4 x 3 x 5 = 360). <p>Two Dice Version: Two dice are rolled. If a single 1 is rolled on either die, the turn ends and all points are lost. If two 1s are rolled on a single turn, the player scores 25 points. Doubles, for example a 2 and a 2, are worth quadruple the points (4 x 4 = 16).</p> 
5 Choose and Roll	<p>Roll 5 dice. Use any operation that you would be able to manipulate the numbers rolled to get the closest to 100 possible. Example: 2, 7, 2, 13, 20</p> <p>20 x 7 = 140 13 x 2 x 2 = 52 140 - 52 = 88</p> <p>7 x 13 = 91 91 + 2 + 2 = 95</p> <p>95 + 13 = 108 (closer!)</p>



Intermediate Tasks	Fraction Dices and Math Symbol Dice (Total 4 pcs)
<p>1 To 10</p>	<p>Roll two fraction dice.</p> <p>What is the sum?</p> <p>Record.</p> <p>Roll the dice again.</p> <p>Add the new total to your previous total.</p> <p>Stop when you get around 10.</p>
<p>2 Choose and Roll</p>	<p>Roll 2 fraction dice and 3 others.</p> <p>Use any operation that you would be able to manipulate the numbers rolled to get the closest to 10 possible.</p> <p>Example: $\frac{1}{2}$, 4, 20, $\frac{1}{3}$, 8</p> <p> $8 + 4 = 12$ $12 / 3 = 4$ $20 / 2 = 10$ $10 + 4 = 14$ </p>
<p>3 Who's Got More?</p>	<p>Roll 2 fraction dice and one operation dice.</p> <p>Solve the equation.</p> <p>Record the value.</p> <p>Complete four more rounds. Whoever has the smallest value wins.</p>
<p>4 Tell Me All You Know!</p>	<p>Roll a fraction dice.</p> <p>Create a model to represent the value of the fraction with any manipulative that you would like.</p> <p>What is the value as a percentage and a decimal?</p> <p>What is an equivalent ratio and fraction to the value?</p> <p>How close is the value to the nearest whole?</p>
<p>5 Find Me the Product</p>	<p>Roll 2 fraction dice.</p> <p>Multiply the fraction together.</p> <p>Create an area model to represent the operation with the pattern tiles.</p>