



## Mathematics Materials/Manipulatives Collections

### 2015 Spring Summative Assessment

#### Special Forms for Students with Blindness or Visual Impairments

Mathematics testlets sometimes call for the use of specific materials or manipulatives. Materials are identified in the Testlet Information Page (TIP) for each testlet. Some materials are required and cannot be substituted, but substitutions are allowed in many cases. For more information about substituting objects, see the *Teacher-Administered Tests* section of the *Test Administration Manual*.

The TIP is not provided until each testlet is assigned. That means the materials needed to assess each student are unknown before the test window opens. Therefore, to give test administrators more opportunity to prepare for the mathematics assessment before the testing window opens, DLM has compiled a list of materials commonly needed in mathematics testlets. The tables in this document summarize lists of items per grade level. Items listed in parentheses means that these examples are specifically mentioned in some of the testlets. Again, objects may often be substituted. If items are substituted, the script in the testlet may need to also include the substitution.

Hints:

- Find things that already exist in the classroom or are easily found somewhere in the building.
- Pick materials that are familiar to the student.
- Look at the whole list for each grade and find objects that can meet multiple purposes. What types of objects are mentioned more than once?
- Remember that in most cases materials may be substituted as long as they are similar to the ones on the list.

**Example:** for 2 sets of identical objects packaged together (packs of crayons, pencils, markers), the Test Examiner might use two identical packs of flash cards.

This document first covers materials that can be used in **initial precursor level testlets**. At the end of the document, Test Examiners will find materials that can be used in testlets **above the initial precursor level**.

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*This document covers materials that can be used in testlets designed for students with blindness or visual impairments. These testlets are designated by "BVI" in the form name. For information about materials used in standard mathematics testlets, please see the companion document on the DESE MAP-A homepage, "Mathematics Materials/Manipulatives Collections"*

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Grade	Common Materials
Third	<ul style="list-style-type: none"><li>• 13 circles: 1 whole, 3 each varying in size, 1 cut into halves, 1 cut into two unequal pieces, 3 cut into thirds, 1 cut into three unequal pieces, 1 cut into three unequal pieces, and 1 cut into fourths, and 1 cut into tenths (paper, cardboard, plastic, etc.)</li><li>• 12 Squares: 1 whole, 3 each varying in size, 1 cut into halves, 1 cut into two unequal pieces, 1 cut into thirds, 1 cut into three unequal pieces, 3 cut into fourths, and 1 cut into four unequal pieces (paper, cardboard, plastic, etc.)</li><li>• 5 rectangles: 1 whole, 1 cut into two unequal pieces, 1 cut into three unequal pieces, 1 cut into three rows, and 1 cut into four columns (paper, cardboard, plastic, etc.)</li><li>• 3 triangles: 1 whole, 1 cut into halves, and 1 cut into two unequal pieces (paper, cardboard, plastic, etc.)</li><li>• 3 stars: 1 whole, 1 cut into four fourths, 1 cut into sixths (paper, cardboard, plastic, etc.)</li><li>• 50 objects (checkers, erasers, counters, etc.)</li><li>• Tactile digital clock (magnetic numbers and a colon, etc.)</li><li>• 100's grid (tactile or braille, etc.)</li><li>• 3 containers (bowl, small box, basket, etc.)</li><li>• Material to bundle objects (string or rubber band, etc.)</li><li>• Money: 10 dimes, 6 pennies, 4 ten dollar bills, 10 one dollar bills (real or fake)</li></ul>



Grade	Common Materials
Fourth	<ul style="list-style-type: none"><li>• 13 circles: 5 whole, 1 cut into halves, 1 cut into thirds, 2 cut into fourths, 2 cut into four unequal parts, 1 cut into sixths, and 1 cut into eighths (paper, cardboard, plastic, etc.)</li><li>• 13 squares: 5 whole, 1 cut into halves, 2 cut into two unequal pieces, 1 cut into thirds, 1 cut into three unequal pieces, 3 cut into fourths (paper, cardboard, plastic, etc.)</li><li>• 14 rectangles: 10 whole, 1 cut into halves, 1 cut into thirds, 1 cut into fourths, and 1 cut into four unequal pieces (paper, cardboard, plastic, etc.)</li><li>• 6 triangles: 3 whole, and 3 cut into halves (paper, cardboard, plastic, etc.)</li><li>• 6 hearts: 3 whole, 1 cut into halves, 1 cut into two unequal pieces, and 1 cut into fourths (paper, cardboard, plastic, etc.)</li><li>• Stars: 1 whole and 1 cut into pieces (paper, cardboard, plastic, etc.)</li><li>• 5 rectangular prisms (shoe box, cereal box, etc.)</li><li>• Math symbols: 1 point, 1 line, 2 line segments, 1 ray, 1 set of parallel lines, 1 set of intersecting lines, 1 right angle, 2 obtuse angle, 9 acute angles (varying in size), greater than symbol, less than symbol, equal sign (wax sticks, chenille strips, raised dimensional paint, etc.)</li><li>• Organizing surface (cookie sheet, magnetic board, etc.)</li><li>• Tactile digital clock (magnetic numbers and a colon, etc.)</li><li>• Container that can hold three cups of water (pitcher, etc.)</li><li>• Water</li><li>• 1 Object that weighs one pound (book, stapler, tape dispenser, etc.)</li><li>• Object that weigh three pounds (book, book bag, etc.)</li><li>• Slice of bread</li><li>• Box of crayons</li><li>• Money: 5 quarters, 1 nickel, 1 penny, and 1 dime (real or fake)</li><li>• 3 squares with perimeter raised (wax sticks, dimensional paint, etc.)</li><li>• 4 small unit cubes</li><li>• 20 unit squares</li><li>• 12 unit tiles</li><li>• 2 sets of 3 identical containers (bowls, peanut butter jar, cups, etc.)</li><li>• Material to fill containers (beans, rice, salt, etc.)</li><li>• 3 sandwich bags</li><li>• 2 sets of letters A- Z (plastic, felt, magnetic, etc.)</li><li>• 30 small objects (checkers, erasers, counters, etc.)</li></ul>



Grade	Common Materials
Fifth	<ul style="list-style-type: none"><li>• 23 squares: 9 whole squares, 2 small, 5 medium, 2 large, 1 cut into halves, 1 cut into thirds, 1 cut into sixths, and 2 squares cut into two unequal pieces (paper, cardboard, plastic, etc.)</li><li>• 14 rectangles: 2 whole identical rectangles, 1 cut into halves, 1 cut into thirds, 1 cut into fourths, 1 cut into sixths, 1 cut into eighths, 1 cut into tenths, 1 cut into twelfths, 1 rectangle cut into 2 equal pieces diagonally, and 2 rectangles cut into two unequal pieces (paper, cardboard, plastic, etc.)</li><li>• 5 triangles: 2 identical equilateral triangles, 1 smaller similar equilateral triangle, 1 isosceles triangle, and 1 right triangle (paper, cardboard, plastic, etc.)</li><li>• 10 circles: 2 whole identical circles, 1 cut into halves, 1 cut into thirds, 1 cut into fourths, 1 cut into fifths, 1 cut into eighths, 1 cut into tenths, and 2 circles cut into two unequal pieces (paper, cardboard, plastic, etc.)</li><li>• 1 pentagon (paper, cardboard, plastic, etc.)</li><li>• 1 trapezoid (paper, cardboard, plastic, etc.)</li><li>• 1 rhombus (paper, cardboard, plastic, etc.)</li><li>• 1 rectangular prism (paper, cardboard, plastic, etc.)</li><li>• 3 dimensional shapes: 2 identical cylinders, 2 similar cones, 1 small, 1 medium, 1 sphere, and 1 cube (paper, cardboard, plastic, etc.)</li><li>• 40 small objects (checkers, dominoes, erasers, counters, unit cubes, etc.)</li><li>• Flat organizing surface (cookie sheet, cutting board, hook and loop fastener board, etc.)</li><li>• 40 stiff, straight objects (wax sticks, straws, chenille strips, etc.)</li><li>• 6 containers: 3 identical with 10 compartments, 3 identical with 4 compartments (egg cartons, plastic, etc.)</li><li>• Fraction pie kit: <math>1/4</math>, <math>2/4</math>, <math>3/4</math>, <math>1/3</math>, <math>2/3</math>, <math>3/3</math> (paper, cardboard, plastic, etc.)</li><li>• Tactile digital clock (magnetic numbers and a colon, etc.)</li><li>• Tactile analog clock (magnetic numbers, etc.)</li></ul>
Sixth	<ul style="list-style-type: none"><li>• 6 whole squares (paper, cardboard, plastic, etc.)</li><li>• 6 whole stars (paper, cardboard, plastic, etc.)</li><li>• 6 whole triangles (paper, cardboard, plastic, etc.)</li><li>• 10 circles: 6 whole, 2 cut into thirds, 1 cut into fourths, and 1 cut into tenths (paper, cardboard, plastic, etc.)</li><li>• 3 rectangles with raised edge surfaces: 2 with an area less than 10 square units, and 1 with an area greater than 10 but fewer than 25 square units (shoe box lid, picture frame, raised dimensional paint, etc.)</li><li>• 30 – 1 inch square unit tiles</li><li>• 50 small objects (erasers, counters, pennies, straws, etc.)</li><li>• 2 sets of numbers 0-9 (plastic, magnetic, felt)</li><li>• Math symbols: addition, subtraction, multiplication, division, and equal signs to build equations (plastic, large print, braille, magnetic numbers, raised dimensional paint, etc.)</li><li>• Flat organizing surface (cookie sheet, magnetic board, etc.)</li><li>• 3 small containers (bowl, box, basket, etc.)</li><li>• 13 cards (game, baseball, etc.)</li><li>• 20 stiff, straight objects (wax sticks, straws, chenille strips, etc.)</li></ul>



<b>Grade</b>	<b>Common Materials</b>
Seventh	<ul style="list-style-type: none"><li>• 3 squares: 1 small, 1 medium, and 1 large (paper, cardboard, plastic, etc.)</li><li>• 5 triangles: 1 small and 1 medium similar triangle, and 3 identical triangles (paper, cardboard, plastic, etc.)</li><li>• 15 circles: 8 whole, 3 identical circles, 1 small and 1 large circle, 1 cut into halves, 1 cut into thirds, and 1 cut into fourths (paper, cardboard, plastic, etc.)</li><li>• 6 rectangles: 3 whole identical, 1 cut into halves, and 2 cut into two unequal parts (paper, cardboard, plastic, etc.)</li><li>• 3 dimensional shapes: 5 cylinders, 1 small, 1 medium, 1 large, and 2 identical, 2 cones: 1 small, 1 large, 2 spheres: 1 small, 1 large, and 5 cubes: 2 identical, 1 small, 1 medium, and 1 large</li><li>• Flat organizing surface (cookie sheet, magnetic board, etc.)</li><li>• Graph paper with 3 different sizes of embossed rectangles (raised dimensional paint, etc.)</li><li>• Graph paper with 4 different sizes of embossed squares with the dimensions marked on each side (raised dimensional paint, etc.)</li><li>• 1 small square table</li><li>• 1 chair</li><li>• 1 small box</li><li>• 1 small ball (wiffle ball, nerf ball, etc.)</li><li>• Math symbols: 3 angles: 1 acute, 1 right, 1 obtuse, 1 point, 1 ray, addition, subtraction, multiplication, division, and equal signs (wax sticks, chenille sticks, raised dimensional paint, etc.)</li><li>• 6 objects that can be taken apart into 2 pieces: 4 identical and 2 different (markers with lids, bowls with lids, etc.)</li><li>• 1 object that doesn't come apart</li><li>• 40 small objects (erasers, counters, pennies, straws, etc.)</li><li>• 2 sets of numbers 0-9 (plastic, magnetic, felt, etc.)</li><li>• 3 sets of 10 objects (10 erasers, 10 pennies, and 10 paper clips, etc.)</li><li>• 15 connecting cubes (unifix cubes, etc.)</li><li>• 15 stiff, straight objects (wax sticks, straws, chenille strips, etc.)</li></ul>



Grade	Common Materials
Eighth	<ul style="list-style-type: none"><li>• 3 squares: 2 identical and 1 similar smaller square (paper, cardboard, plastic, etc.)</li><li>• 1 parallelogram (paper, cardboard, plastic, etc.)</li><li>• 5 rectangles: 3 identical rectangles and 2 similar smaller rectangles (paper, cardboard, plastic, etc.)</li><li>• 3 rhombi: 2 identical and 1 similar (paper, cardboard, plastic, etc.)</li><li>• 1 pentagon (paper, cardboard, plastic, etc.)</li><li>• 8 triangles: 4 identical medium, 1 smaller similar, 2 congruent right triangles, and 1 equilateral triangle (paper, cardboard, plastic, etc.)</li><li>• 3 circles: 2 medium and 1 small (paper, cardboard, plastic, etc.)</li><li>• 1 hexagon (paper, cardboard, plastic, etc.)</li><li>• 1 ellipse (paper, cardboard, plastic, etc.)</li><li>• 2 stars (paper, cardboard, plastic, etc.)</li><li>• 2 identical trapezoids (paper, cardboard, plastic, etc.)</li><li>• 2 sets of numbers 0-9 (plastic, magnetic, felt, etc.)</li><li>• 2 sets of numbers A-Z (plastic, magnetic, felt, etc.)</li><li>• Tactile function table</li><li>• 4 math symbols: 1 arrow, 1 line, 1 line segment, 1 ray, 2 - 45 degree angles, 1 - 20 degree angle, 1 - 30 degree angle, 1 - 60 degree angle, 1 - 70 degree angle, 1 - 90 degree angle, and 1 - 130 degree angle (foam cushion, chenille sticks, wax sticks, raised dimensional paint, etc.)</li><li>• 6 tactile stickers (raised, fuzzy, etc.)</li><li>• Flat organizing surface (cookie sheet, cutting board, hook and loop fastener board, magnetic board, etc.)</li><li>• 1 sheet 1 inch square embossed graph paper</li><li>• 20 one inch square tiles</li><li>• 13 stiff, straight objects (wax sticks, straws, chenille strips, etc.)</li><li>• 2 rubber bands</li><li>• 4 thumbtacks</li><li>• 1 push pin</li></ul>



Grade	Common Materials
High School	<ul style="list-style-type: none"><li>• 1 ellipse (paper, cardboard, plastic, etc.)</li><li>• 1 pentagon (paper, cardboard, plastic, etc.)</li><li>• 11 rectangles: 3 identical, 1 smaller, 2 large and 2 small, 1 that measures four inches by three inches, 1 that measures 7 inches by six inches, 1 that measures two inches by six inches, and 1 that measures four inches by six inches (paper, cardboard, plastic, etc.)</li><li>• 5 identical squares (paper, cardboard, plastic, etc.)</li><li>• 1 trapezoid (paper, cardboard, plastic, etc.)</li><li>• 1 parallelogram (paper, cardboard, plastic, etc.)</li><li>• 5 stars (paper, cardboard, plastic, etc.)</li><li>• 5 identical circles (paper, cardboard, plastic, etc.)</li><li>• 16 triangles: 4 identical, 2 identical equilateral, 2 identical right and 1 smaller right, 1 isosceles triangle, and 3 scalene triangles: 2 identical and 1 smaller (paper, cardboard, plastic, etc.)</li><li>• 3-D shapes: 2 identical cylinders, 2 smaller identical cylinders 2 identical cones, 1 smaller cone, 1 rectangular prism, 2 spheres (1 large and 1 small), 2 cubes (wood, plastic, etc.)</li><li>• Tactile function graph</li><li>• 2 sets of numbers 0-9 (plastic, magnetic, felt, etc.)</li><li>• 2 sets of letters A-Z (plastic, magnetic, felt, etc.)</li><li>• 25 stiff, straight objects (wax sticks, straws, chenille strips, etc.)</li><li>• 12 objects (erasers, counters, pennies, straws, etc.)</li><li>• 3 containers (bowl, basket, box etc.)</li><li>• Raised graph paper</li><li>• Large print graph paper</li><li>• Material to stabilize raised graph paper (cardboard, cork board, etc.)</li><li>• 5 rubber bands</li><li>• 2 push pins</li><li>• Math symbols: addition, multiplication, division, subtraction, and equal signs, 1 ray, 1 point, 1 angle, 1 set of two parallel lines, 1 set of two non-intersecting non-parallel lines, 1 set of two perpendicular lines, 1 set of two non-perpendicular intersecting line segments, 1 set of two perpendicular line segments, 1 right angle, and 1 line (wax sticks, chenille strips, raised dimensional paint, etc.)</li><li>• 8 thumbtacks</li><li>• 25 small objects (erasers, counters, pennies, straws, etc.)</li><li>• 4 function tables</li><li>• 4 linear graphs</li><li>• Tactile stickers (raised, textured, etc.)</li><li>• 1 Base Ten Set (5 tens and 15 ones, etc.)</li><li>• Tactile calculator</li><li>• Money: 10 one dollar bills and 5 quarters (real or fake)</li></ul>