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| **Measuring Area of Parallelograms and Triangles** | | | |
| Determines the area of a rectangle.  “A rectangle is an array of squares. To find the area, I multiply the number of rows by the number of columns or use the formula *A* = *b* × *h*.  This rectangle has area  5 cm × 3 cm = 15 cm2.” | | Partitions and rearranges a parallelogram to form a rectangle with the same base and height.    “I partitioned the parallelogram  and moved the triangle to  create a rectangle.  I then found the area of the rectangle:  *A* = *b* × *h* = 12 cm × 3 cm= 36 cm2.  The area of the parallelogram is also 36 cm2.” | Doubles a triangle to create a parallelogram (area of triangle is one-half that of parallelogram).    “I rotated the triangle to make a parallelogram  with the same base and height.  The area of the triangle is one-half  the area of the parallelogram.  Area of parallelogram:  15 cm × 4 cm = 60 cm2  Area of triangle: 60 cm2 ÷ 2 = 30 cm2  So, the formula for the area of a triangle is:  *A* = *b* × *h* ÷ 2.” |
| **Observations/Documentation** | | | |
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| **Measuring Area of Parallelograms and Triangles (cont’d)** | | |
| Determines area by decomposing shapes into smaller shapes (rectangles, triangles, parallelograms), then adding their areas.  A diagram of a triangle  Description automatically generated  “I decomposed the shape into a triangle  and 2 rectangles.  Area of small rectangle: 3 cm × 6 cm = 18 cm2  Area of large rectangle: 6 cm × 10 cm = 60 cm2  Area of triangle: 6 cm × 5 cm ÷ 2 = 15 cm2 Area of composite shape:  18 cm2 + 60 cm2 + 15 cm2 = 93 cm2” | Decomposes a composite shape in different ways and realizes that its area doesn’t change (conservation of area).  A diagram of a triangle  Description automatically generated  “I decomposed the shape into a triangle  and 2 rectangles.  Area of small rectangle: 4 cm × 6 cm = 24 cm2  Area of large rectangle: 9 cm × 6 cm = 54 cm2  Area of triangle: 6 cm × 5 cm ÷ 2 = 15 cm2 Area of composite shape:  24 cm2 + 54 cm2 + 15 cm2 = 93 cm2  The area is always the same no matter how  I decompose the shape.” | Flexibly solves problems involving the relationships among the areas of rectangles, parallelograms, and triangles.    What is the area of the sail on the toy boat?“I doubled the triangular sail to make  a parallelogram with the same base and height.  I found the area of the parallelogram:  34 cm × 32 cm = 1088 cm2, then divided  the area in half to find the area of the triangle: 1088 cm2 ÷ 2 = 544 cm2.” |
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| **Interpreting and Expressing Volume** | | | |
| Explores volume as the amount of space occupied by a 3-D shape.  A black and white diagram of a cube  Description automatically generated  “This cube occupies a space  that can be measured.  Each edge has a length of 1 cm  and it has a volume of 1 cm3.” | Recognizes volume of 3-D shapes in familiar contexts.  “Everyday objects have volume;  for example, a loaf of bread  and a cereal box.” | Models volume using concrete materials (non-standard units).  A box with a lid  Description automatically generated  “The volume of the box  is about 12 marbles.  Marbles aren’t the greatest unit because they leave gaps.” | Expresses volume of 3-D shapes using standard units (cubic metres, cubic centimetres).  A box with a lid  Description automatically generated  “I filled the box with centimetre  cubes. The volume of the box  is about 24 cm3.” |
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| **Interpreting and Expressing Volume (cont’d)** | | | |
| Models volume of a rectangular prism as a 3-D array of cubic units.  A pair of cubes with squares  Description automatically generated  “The prism is a 3-D array of centimetre cubes. There are  12 cubes in each layer and 3 layers: 12 + 12 + 12 = 36. The prism has volume 36 cm3.” | Recognizes that volume remains the same when decomposed or rearranged.  A pair of cubes with squares  Description automatically generatedA grey square with black squares  Description automatically generated with medium confidence  “I rearranged the 36 centimetre cubes to make a different prism.  The number of cubes didn’t change so, the volume is still 36 cm3.” | Determines the volume of a rectangular prism using multiplication.  A pair of cubes with squares  Description automatically generated    “The prism has length 4 cm,  width 3 cm and height 3 cm.  The area of the base is  4 cm × 3 cm = 12 cm2, and the volume of the prism is:  Area of the base × height  = 12 cm2 × 3 cm  = 36 cm3.” | Flexibly solves problems in various contexts that involve the volume of rectangular prisms.  A square prism has height 11 cm and volume 539 cm3. Determine the side length of the square base.  “Volume = area of base × height 539 cm3 = Area of the base × 11 cm  539 ÷ 11 = 49 So, the area of the base is 49 cm2. The base is a square, so all sides are equal: 49 cm2 = *s* × *s* Since 7 × 7 = 49, the side length  of the square base is 7 cm.” |
| **Observations/Documentation** | | | |
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