Application & Enrichment 1G
wind-up mouse.

1. Final answer is 120 (given).
2. Final answer is 486.
3. Final answer is 280.
4. Final answer is 576.

Application & Enrichment 2G
space shuttle

1. 10
2. 9
3. 2
4. 5
5. 2
6. 5
7. 1
8. 10
9. 3
10. 5
11. 2
12. 2
13. 4
14. 3
15. 2
16. 1
17. 4
18. 5
19. 8
20. 7

Application & Enrichment 3G
boat

1. divide
2. multiply
3. divide
4. divide
5. multiply

Application & Enrichment 4G
music box figure

1. \(5A = 15\) or \(15 \div 5 = A\)
   \(A = 3\)
2. \(3B = 30\) or \(30 \div 3 = B\)
   \(B = 10\)
   Students may use any letter they like for the unknown.
3. \(2D = 12\) or \(12 \div 2 = D\)
   \(D = 6\)
4. \(8H = 80\) or \(80 \div 8 = H\)
   \(H = 10\)

Application & Enrichment 5G

1. line segment —
2. point ·
3. ray →
4. line ↔
5. point
6. line segment
7. ray
8. line

Application & Enrichment 6G
clock

These answers may be in any order.
\(8 \times 3, 6 \times 4, 4 \times 6, 3 \times 8\)

Application & Enrichment 7G
6 inches \(\times\) 4 inches = 24 square inches

Application & Enrichment 8G
airplane

1. Put a black X on the four shapes that do not have four sides
2. Five parallelograms. They all have two sets of parallel sides.
3. Three rectangles. They all have four right angles.
4. One square. All four sides are the same length.
The unmarked figure is a trapezoid.

**Application & Enrichment 9G**

1. $90^\circ + 90^\circ + 90^\circ + 90^\circ = 360^\circ$
   Yes
2. $3 \times 45^\circ = 135^\circ$ or $45^\circ + 45^\circ + 45^\circ$
   $= 135^\circ$
   Smaller angles may be added to find the measure of larger angles.

1. There are two obtuse angles.
2. There are two right angles.
3. Use the definitions to check the angles. They may be turned in any direction.
4. $90^\circ - 75^\circ = 15^\circ$, so $D = 15^\circ$

**Application & Enrichment 10G**

hot air balloon

1. always
2. more likely
3. always
4. never
5. less likely

**Application & Enrichment 11G**

1. Smith:
   $1 + 2 + 7 + 10 = 20; \quad 20 \div 4 = 5$
   Jones:
   $4 + 5 + 6 = 15; \quad 15 \div 3 = 5$
   Smith = Jones
2. Chloe:
   $6 + 7 + 9 = 21; \quad 21 \div 3 = 7$
   Tucker:
   $1 + 2 + 12 = 15; \quad 15 \div 3 = 5$
   Chloe > Tucker
3. Timothy:
   $1 + 2 + 3 = 6 \div 3 = 2$
   Peter:
   $0 + 2 + 10 = 12; \quad 12 \div 3 = 4$
   Timothy < Peter

<table>
<thead>
<tr>
<th>number of row</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of boxes in that row</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>total number of boxes</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>10</td>
<td>15</td>
<td>21</td>
<td>28</td>
<td>36</td>
</tr>
</tbody>
</table>

1. They are the same.
2. Add the number of boxes in each new row to the total number of boxes in the previous rows.
   Or, just looking at the bottom row, add a number that is one more each time: $1 + 2 = 3, 3 + 3 = 6, 6 + 4 = 10, 10 + 5 = 15$, etc. There may be other ways to describe the patterns in the chart.

<table>
<thead>
<tr>
<th>number of triangles</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of toothpicks</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>11</td>
<td>13</td>
<td>15</td>
</tr>
</tbody>
</table>

3. 13 toothpicks
4. 21 toothpicks. Each new triangle needs two new toothpicks.
   Comparing the top and bottom rows of the chart, double the number of triangles and add one to find the number of toothpicks needed. Experimenting with this is more important than finding the exact answer without help.
Application & Enrichment 12G
carousel

1. subtract
2. divide
3. multiply
4. add
5. divide

Application & Enrichment 13G
tractor

1. 16 new blocks
2. 24 new squares
3. 32 new squares
4. After the first step, the numbers skip count by 8.

Application & Enrichment 14G

1. 8 quadrilaterals
2. 1 trapezoid (is also a quadrilateral)
3. 5 parallelograms (are also quadrilaterals)
4. 4 rectangles (are also parallelograms)
5. 2 squares (are also rectangles)
6. the triangle on the bottom right

Application & Enrichment 15G

sky - blue; grass - green; castle and sun - yellow; castle door - brown;
taller buildings - orange; shorter buildings - tan

Use the chart to match names with the correct number of sides.

Application & Enrichment 16G

1. 2 squares
2. $18 \div 4 = 4 \text{ r.}2$
3. Answers will vary.
4. 1 square
5. $16 \div 5 = 3 \text{ r.}1$
6. Answers will vary.

1. $50 \div 7 = 7 \text{ r.}1$
   Each neighbor gets 7 with 1 left over. It could be cut up and divided, given to some one else, or Riley could keep it. She could also give it to one of the seven neighbors, but the shares would no longer be even.

2. $28 \div 5 = 5 \text{ r.}3$
   Since pets cannot be cut up into pieces, he will need an extra cage for the remainder. So, 6 cages are needed, but one cage will have 3 pets, not 5 pets.
3. $32 \text{ ft} \div 3 \text{ ft} = 10 \text{ pieces r.2}$ (You must first change 1 yd to 3 ft.)
   10 pieces are 3 ft or 1 yd long.
   The leftover piece is 2 ft long.

4. $17 \div 4 = 4 \text{ r.1}$
   Each sister gets 4 things if Julia wants to keep things divided evenly.
   There is 1 thing left over. If it is something that could be cut, she could cut it into 4 even pieces and give one piece to each sister.

5. $32 \div 6 = 5 \text{ r.2}$
   Jeff will need six shelves to hold all of the items in his collection.
   One shelf will have only 2 items.

### Application & Enrichment 17G

**Across**
1. quotient
2. triangle
3. round
4. base
5. parallel
6. rectangle
7. right
8. divisor
9. perimeter

**Down**
1. 20, 20, 20, 20
2. They are all the same.
3. $1 + 19 = 20$
4. $6 + 14 = 20$
5. 2, 4, 6, 8 They skip count by 2.
6. $10 - 0 = 10$
7. 40, 80, 120, 160
   Each answer is 40 more than the one before.
   Or, the second factors in the problems skip count by 10.
8. $4 \times 50 = 200$
   $4 \times 60 = 240$

### Application & Enrichment 18G

**Division problems**
- $5 \div 2 = 2 \text{ r.1}$
- $17 \div 6 = 2 \text{ r.5}$
- $39 \div 10 = 3 \text{ r.9}$
- $19 \div 5 = 3 \text{ r.4}$
- $55 \div 7 = 7 \text{ r.6}$
- $39 \div 8 = 4 \text{ r.7}$
- $20 \div 3 = 6 \text{ r.2}$
- $53 \div 9 = 5 \text{ r.8}$
- $35 \div 4 = 8 \text{ r.3}$

Under the letters in order should have:
1, 5, 9, 4, 6, 7, 2, 8, 3

Solution: I can do long division.

1. small triangles: 8
   larger triangles with the sides of the square as bases: 4
   large triangle with diagonals as bases: 4
   $8 + 4 + 4 = 16$ triangles

2. 10 squares
   16 triangles (see #1) + 16
   triangles inside smaller square = 32 triangles

### Application & Enrichment 19G

1–4. Done
1. 60 miles
2. 9 days
3. 9 days
4. no
5. Day 7 on the graph; traveled for 2 days ($7 - 5 = 2$).
6. no

Application & Enrichment 20G
1. top: 2, 4, 6, 8, 10, 12
   bottom: 7, 9, 11, 13, 15, 17
2. top: 1, 3, 9, 27, 81, 243
   bottom: 0, 2, 8, 26, 80, 242
3. top: 5, 10, 15, 20, 25, 30
   bottom: 6, 12, 18, 24, 30, 36
4. top: 2, 4, 6, 8, 10, 12
   (skip count by 2)
   bottom: 5, 7, 9, 11, 13, 15
   Add 3 to top number, or add 2
to previous bottom number each
time.
5. top: 3, 6, 9, 12, 15, 18, 21, 24
   (skip count by 3)
   bottom: 2, 5, 8, 11, 14, 17, 20,
   23
   Subtract 1 from top number or
   add 3 to previous bottom number
each time.

1. 2008
2. Country A
3. Production went down sharply,
   and then began a steady increase.
4. no

Application & Enrichment 21G
This is called the "Haberdasher’s Puzzle."

Application & Enrichment 22G
1. $6 \geq 3$, so girls ate more

2. $8 - 4 = 4$ more hot dogs
3. no

Application & Enrichment 23G
1. 

2. $1 \text{ ft} \times 9 \text{ ft} = 9 \text{ sq ft}$; $2 \text{ ft} \times 8 \text{ ft} =$
   $16 \text{ sq ft}$; $3 \text{ ft} \times 7 \text{ ft} = 21 \text{ sq ft}$; $4 \text{ ft} 
   \times 6 \text{ ft} = 24 \text{ sq ft}$; $5 \text{ ft} \times 5 \text{ ft} = 25 
   \text{ sq ft}$
3. The rectangle that is $1 \text{ unit} \times 9$
   units has the smallest area.
4. The rectangle that is $5 \text{ units} \times 5$
   units has the largest area.

1. An extra pen will be needed -
   please don’t divide the babies
   into parts!
2. Depending on what Sue made,
   she could divide the leftovers
   into parts, or save the remainder
   for herself or for some other
   purpose.
3. Write the remainder over the
   divisor to make a fraction.

Application & Enrichment 24G
no solutions
Application & Enrichment 25G

1. yes, yes, no, yes, yes
2. yes for the purposes of this lesson (Most faces are slightly different on each side.)
3. no
4. Answers will vary.

1. top: 9, 18, 27, 36, 45, 54, 63, 72 (skip count by 9)
   bottom: 3, 6, 9, 12, 15, 18, 21, 24 (skip count by 3)
   Also, you can divide top number by 3 to get bottom number.
2. top: 2, 3, 4, 5, 6, 7, 8, 9 (count by 1)
   middle: 4, 6, 8, 10, 12, 14, 16, 18 (skip count by 2)
   bottom: 6, 9, 12, 15, 18, 21, 24, 27 (skip count by 3)
   Vertically, each column counts by the number in the top row.
3. top: 20, 19, 18, 17, 16, 15, 14, 13 (subtract 1 each time)
   bottom: 20, 21, 22, 23, 24, 25, 26, 27 (add 1 each time)
   Difference between top and bottom rows is 2 more each time.
4. Answers will vary.

Application & Enrichment 26G

Cutting out drawing will make a symmetrical leaf.

Application & Enrichment 27G

Pan 1: (15" × 15") × 3" = 225" × 3" = 675 cubic inches
Pan 2: (12" × 12") × 3" = 144" × 3" = 432 cubic inches
Pan 3: (9" × 9") × 2" = 81" × 2" = 162 cubic inches
Pan 4: (6" × 6") × 4" = 36" × 4" = 144 cubic inches
675 cu in + 432 cu in + 162 cu in + 144 cu in = 1,413 cubic inches total volume

Answers will vary.

Application & Enrichment 28G

First line: 3, 6, 9, 12, 15, 18, 21, 24, 27
Second line: 1, 2, 3, 4, 5, 6, 7, 8, 9
Under letters: 1, 2, 3, 4, 5, 6, 7, 8, 9
Solution: All roads lead to Rome.

Unscrambled words in order:
- square, triangle, trapezoid, area,
- average, bases, height, ounces, divided,
- sixteen

The triangle may be on any side of the square, and of any proportions, but the overall shape must be a trapezoid.

Application & Enrichment 29G

horse and chariot

1. 55
2. 385
3. 160

Application & Enrichment 30G

1. 3 × 1,000 m = 3,000 m
2. 2 × 1,000 L = 2,000 mL
3. 500 ÷ 100 = 5 m
600 cm = 6 m
3,000 mL = 3 L
2,000 m = 2 km