

## APPLICATION & ENRICHMENT SOLUTIONS

### 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

$$6 \text{ inches} \times 4 \text{ inches} = 24 \text{ square inches}$$

### 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

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

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

### Application & Enrichment 10G

hot air balloon

- always
- more likely
- always
- never
- less likely

### Application & Enrichment 11G

- Smith:  
 $1 + 2 + 7 + 10 = 20$ ;  $20 \div 4 = 5$   
Jones:  
 $4 + 5 + 6 = 15$ ;  $15 \div 3 = 5$   
Smith = Jones
- Chloe:  
 $6 + 7 + 9 = 21$ ;  $21 \div 3 = 7$   
Tucker:  
 $1 + 2 + 12 = 15$ ;  $15 \div 3 = 5$   
Chloe > Tucker

- Timothy:  
 $1 + 2 + 3 = 6 \div 3 = 2$   
Peter:  
 $0 + 2 + 10 = 12$ ;  $12 \div 3 = 4$   
Timothy < Peter

number of row	1	2	3	4	5	6	7	8
number of boxes in that row	1	2	3	4	5	6	7	8
total number of boxes	1	3	6	10	15	21	28	36

- They are the same.
- 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.

number of triangles	1	2	3	4	5	6	7
number of toothpicks	3	5	7	9	11	13	15

- 13 toothpicks
- 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

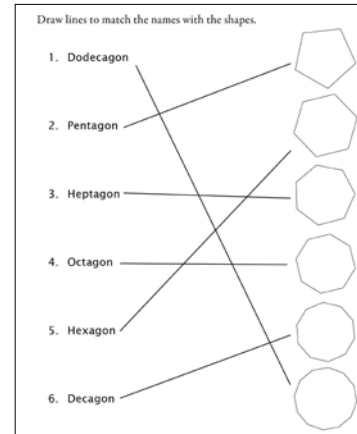
1. 6 circles total
2. 10 circles total
3. 15 circles total
4. Add the number of the step to the previous total number of circles to get the new total number. There may be other ways to describe the pattern.

**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
3. round
4. base
7. parallel
10. rectangle
11. right
12. divisor
13. perimeter

#### Down

2. triangle
  5. factor
  6. areas
  8. average
  9. height
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

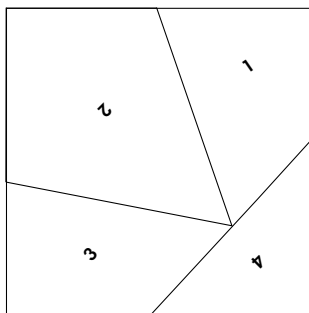
### Application & Enrichment 20G

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

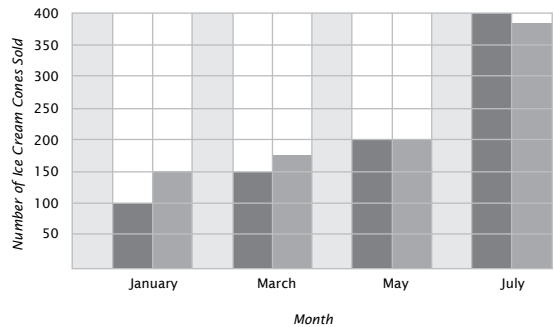
This is called the "Haberdasher's Puzzle."



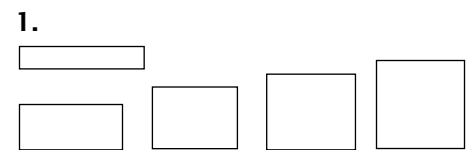
### Application & Enrichment 22G

1.  $6 \geq 3$ , so girls ate more

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



### Application & Enrichment 23G



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 unit  $\times$  9 units has the smallest area.
4. The rectangle that is 5 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**

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

**Application & Enrichment 26G**

Cutting out drawing will make a symmetrical leaf.

**Application & Enrichment 27G**

- Pan 1:  $(15" \times 15") \times 3" = 225" \times 3" = 675$  cubic inches  
 Pan 2:  $(12" \times 12") \times 3" = 144" \times 3" = 432$  cubic inches  
 Pan 3:  $(9" \times 9") \times 2" = 81" \times 2" = 162$  cubic inches

Pan 4:  $(6" \times 6") \times 4" = 36" \times 4" = 144$  cubic inches

$675 \text{ cu in} + 432 \text{ cu in} + 162 \text{ cu in} + 144 \text{ cu in} = 1,413$  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

- 55
- 385
- 160

**Application & Enrichment 30G**

- $3 \times 1,000 \text{ m} = 3,000 \text{ m}$
- $2 \times 1,000 \text{ L} = 2,000 \text{ mL}$
- $500 \div 100 = 5 \text{ m}$

$600 \text{ cm} = 6 \text{ m}$

$3,000 \text{ mL} = 3 \text{ L}$

$2,000 \text{ m} = 2 \text{ km}$