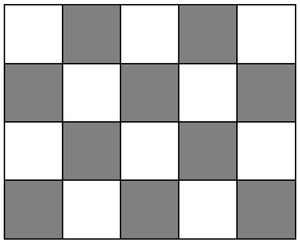
Chapter Task Answers

Chapter 1 Task pp. 55–56

A. 

20 tiles

B. For example, Kate's shape pattern is a growing pattern because each shape gets bigger. Her pattern adds one row and one column each time. Shape 1 has one row and two columns; shape 2 has two rows and three columns, and so on.

C.

Shape	Number of tiles
1	2
2	6
3	12
4	20
5	30

D. Answers will vary. For example:

I counted the number of tiles in the picture for shape 3. I counted the number of tiles in the picture I drew on grid paper for shape 4. For shape 5, I knew there would be an extra row and an extra column, so I counted all the tiles in shape 4 and added a row and a column on to that, which was an extra 10 tiles (20 + 10 = 30).

Another way to figure it out is to look at the pattern in the t-chart. The number of tiles goes up by an extra two tiles each time:

2 + 4 = 6

6 + 6 = 12

12 + 8 = 20

20 + 10 = 30

You can see that the pattern goes up by an extra two tiles each time: + 4, + 6, + 8, + 10. Shape 6 would be 30 + 12 = 42 tiles.

E. Answers will vary. For example:

Another pattern in Kate's shape pattern is a colour pattern. Row 1 of the shapes always starts with a white tile and the next row always starts with a red tile. So the pattern for every first row is white tile, red tile, white tile, and so on. That will also be the pattern for every third row and every other odd numbered row. The pattern for every second row is red tile, white tile, red tile and so on. That will also be the pattern for every fourth row and every other even numbered row. When the shapes get bigger, the pattern will show more. Red tiles are never beside, above, or below other red tiles, and white tiles are never beside, above, or below other white tiles.

Chapter 2 Task pp. 66–67

A.

404	414	424	434	444	454	464	474	484	494
505	515	525	535	545	555	565	575	585	595
606	616	626	636	646	656	666	676	686	696
707	717	727	737	747	757	767	777	787	797

For example, I know I found them all because I went in order from 400 to 800. In the 400s, I had to make sure I used every number from 0 to 9 in the tens column because the ones and the hundreds columns had to have a 4. I did the same thing for the 500s, 600s, and 700s.

B. For example, I put the palindromes from prompt A in order from least to greatest when I wrote them out. I know that they are in order because I started with the 400s and increased each number by ten from 404 to 414, 424, and so on. I did that so I wouldn't miss any palindromes. I did the same for the 500s, 600s, and 700s.

C. The palindrome 646 is the 25th number in the list. For example, I know because I counted in order from least to greatest starting at 404, and when I got to 25, the palindrome was 646. I also know it's the 25th number because there are 10 numbers in each row (ten 400s, ten 500s, and so on). So I can count by tens—the first row (the 400s) is ten, the second row (the 500s) is 20, and half of the third row (600s), or the 25th number, is 646.

Chapter 3 Task pp. 60–61

B. Most students will not choose to sort the names where the groups will overlap.

Possible ways to sort names:
- number of letters (example)
- number of syllables
- number of vowels
- number of consonants
- names beginning with a vowel and names beginning with a consonant

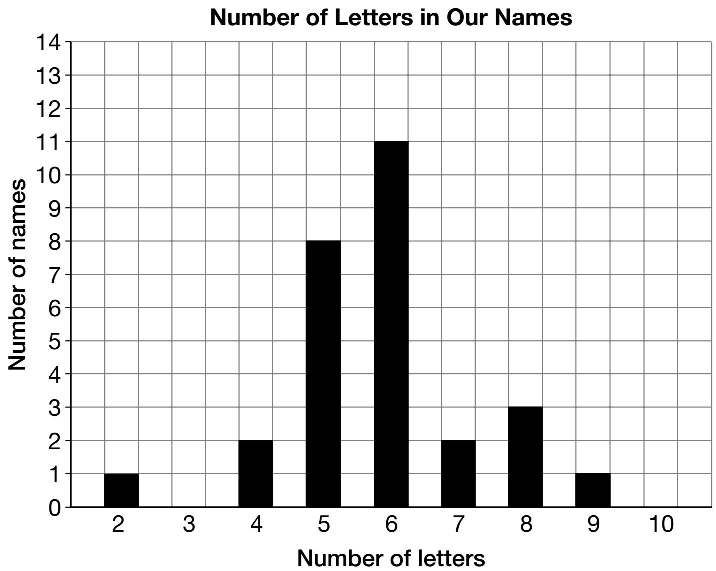
The groups will not overlap because your name can only have one total number of letters. You can't have 5 and 6 letters in your name.

C. Possible labels for the sorted groups:
- number of letters: names with 2 letters, names with 3 letters, names with 4 letters, etc.
- number of syllables: names with 1 syllable, names with 2 syllables, names with 3 syllables, etc.
- number of vowels: names with 1 vowel, names with 2 vowels, names with 3 vowels, etc.
- number of consonants: names with 1 consonant, names with 2 consonants, etc.
- names beginning with a vowel and names beginning with a consonant

D. Students will sort the names according to the groups and come up with a tally for how many names are in each group. For example:

Number of Letters in our Names		
Names	**Tally**	**Total**
Names with 2 letters	|	1
Names with 3 letters		0
Names with 4 letters	||	2
Names with 5 letters	~~||||~~ |||	8
Names with 6 letters	~~||||~~ ~~||||~~ |	11
Names with 7 letters	||	2
Names with 8 letters	|||	3
Names with 9 letters	|	1
Names with 10 letters		0

E. Many students will choose to use grid paper for their graph. For example:



F. Most students will choose a scale of one or two for this graphing task. Sample answer: "It made sense to use a scale of one because I was able to fit all of their information on the page. There are 28 students in the class. If I were graphing the names of all the students in the school, then I would have to use a larger scale like 25."

G. Sample answer: "My graph shows that most students in the class have 6 letters in their names and no students have 3 or 10 letters in their name. The next highest number is 5 letters. There are 3 students with 8 letters in their names. Two students have 4 letters and 7 letters in their names. Only 1 student has 2 letters and 1 student has 9 letters in their name. If I were to look at all the names in the school, it would probably be about the same. Most students would have about 5 or 6 letters in their name."

Chapter 4 Task pp. 63–64

A. Answers will vary. For example:

Sonia's Lengths Each Day

Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
5	7	13	9	11	15	10

5 + 7 = 12, 12 + 13 = 25

9 + 11 = 20

15 + 10 = 25

25 + 25 + 20 = 70 lengths

or

5 + 7 + 13 + 9 + 11 + 15 + 10 = 70

B. Answers will vary. For example:

Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
7	7	7	7	7	7	8

7 + 7 + 7 + 7 + 7 + 7 = 42

42 + 8 = 50 lengths

"I chose the numbers because if I was Malcolm, I would want to swim about the same number of lengths each day so it wouldn't be too hard on some days and too easy on others. I knew I had to swim 50 lengths altogether so I put 50 into 7 different groups, 1 for each day of the week, and it came out 7 lengths on each day and 1 length leftover so one of the days had to have 8 lengths."

C.

1. Sonia swam 25 lengths by Wednesday: 5 + 7 + 13 = 25 lengths
2. Malcolm swam 21 lengths by Wednesday: 7 + 7 + 7 = 21 lengths
3. Sonia's lengths: 25
   Malcolm's lengths: – 21
   4

   Sonia swam 4 more lengths than Malcolm by the end of Wednesday.

Chapter 5 Task pp. 71–72

A & B. Answers will vary. For example:

Activity	Name	Turn 1	Turn 2
penny thumb toss	Keisha	1 m and 10 cm	1 m
penny thumb toss	Hilary	75 cm	90 cm
penny thumb toss	Georgia	1 m and 20 cm	1 m and 34 cm
cotton-ball puff	Keisha	45 cm	58 cm
cotton-ball puff	Hilary	62 cm	88 cm
cotton-ball puff	Georgia	30 cm	42 cm
paper-clip flick	Keisha	1 m and 70 cm	2 m
paper-clip flick	Hilary	1 m and 42 cm	1 m and 55 cm
paper-clip flick	Georgia	1 m and 27 cm	1 m and 30 cm

C. Answers will vary depending on how the students decided to determine the winner. For example, if the decision was made to total the 2 turns and the participant with the combined farthest distance wins, then the results from Part B will have the following winners:

penny thumb toss

Keisha 1 m and 10 cm + 1 m = 2 m and 10 cm
Hilary 75 cm + 90 cm = 165 cm or 1 m and 65 cm
Georgia 1 m and 20 cm + 1 m and 34 cm = 2 m and 54 cm

Georgia won the penny thumb toss because she had the combined farthest distance.

cotton-ball puff

Keisha 45 cm + 58 cm = 103 cm or 1 m and 3 cm
Hilary 62 cm + 88 cm = 150 cm or 1 m and 50 cm
Georgia 30 cm + 42 cm = 72 cm

Hilary won the cotton-ball puff because she had the combined farthest distance.

paper-clip flick

Keisha 1 m and 70 cm + 2 m = 3 m and 70 cm
Hilary 1 m and 42 cm + 1 m and 55 cm = 2m and 97 cm
Georgia 1 m and 27 cm + 1 m and 30 cm = 2m and 57 cm

Keisha won the paper-clip flick because she had the combined farthest distance.

D. For example, cotton-ball puff: 10 minutes; paper-clip flick: 10 minutes; penny thumb toss: 5 minutes; tissue-paper kick: 15 minutes.

E. Answers will vary depending on the estimates in Part D. For example:

Time	Activity	Amount of time
1:00 p.m. to 1:10 p.m.	cotton-ball puff	10 minutes
1:10 p.m. to 1:20 p.m.	paper-clip flick	10 minutes
1:20 p.m. to 1:25 p.m.	penny thumb toss	5 minutes
1:25 p.m. to 1:40 p.m.	tissue-paper kick	15 minutes
1:40 p.m. to 1:45 p.m.	penny thumb toss	5 minutes
1:45 p.m. to 1:55 p.m.	penny thumb toss	5 minutes
1:55 p.m. to 2:00 p.m.	cotton-ball puff	10 minutes

F. For example, it is possible because most of the activities don't take long to do.
I only had 1 activity that was 15 minutes long and the rest were 5 or 10 minutes long.
If all of my activities were 10 or 15 minutes long, it would not be possible to do 7 activities in 1 hour because 7 activities would add up to more than 60 minutes, which is 1 hour.

Chapter 6 Task pp. 74–75

A. Answers will vary. A sample answer:

I think there are about 230 marbles in the large bag.

A small bag has 52 marbles and costs $2.50.

A medium bag has 148 marbles and costs $6.75.

- When I add the number of marbles in the small and medium bag together, I get 200 marbles (52 + 148 = 200).
- When I add the cost of the small bag and the medium bag together, I get $9.25 ($2.50 + $6.75 = $9.25).
- If the large bag costs $10.00, there has to be more than 200 marbles in it, or people would just buy a small bag and a medium bag if they needed 200 marbles. Nobody would ever buy a large bag.
- So I estimated that for the extra 75¢ (the difference between a large bag and the cost of the small and medium bags put together), you would get about 30 more marbles, which would be 230 marbles in the large bag.

B. Tian would need three small bags of marbles to run the game. He needs 144 marbles altogether. When I add two small bags of marbles, I get 104 marbles (52 + 52 = 104 marbles). That is not enough. When I add a third small bag of marbles, I get 156 marbles (104 + 52 = 156 marbles). That is more than enough to run the game. In fact I would have 12 marbles left over (156 – 144 = 12 marbles).

C. If Tian used only small bags, he would need three, and it would cost him $7.50 ($2.50 + $2.50 + $2.50 = $7.50).
If Tian used a medium bag, it would cost him $6.75.

$6.75 is less than $7.50, so a medium bag costs less than three small bags.

D. Answers will vary. For example:

I think Tian should buy a medium bag because it has enough marbles for the game, and it costs less than buying three small bags or one large bag. He only needs 144 marbles, and the medium bag has 148 marbles, giving him four extra in case they get lost. He also saves 75¢ if he buys the medium bag compared to buying three small bags ($7.50 – $6.75 = 75¢).

Chapter 7 Task pp. 59–61

Answers will vary greatly depending on the mosaic design created. Some students will draw their shapes to help them describe their design. For Shirley’s mosaic on Student Book page 192, a sample answer might be:

All of the shapes have straight sides. There are no round shapes in the mosaic.

There are some congruent shapes in the mosaic: the yellow squares are congruent, the white triangles are congruent, the green rectangles are congruent, and the blue triangles are congruent. I know this because they have exactly the same size and shape.

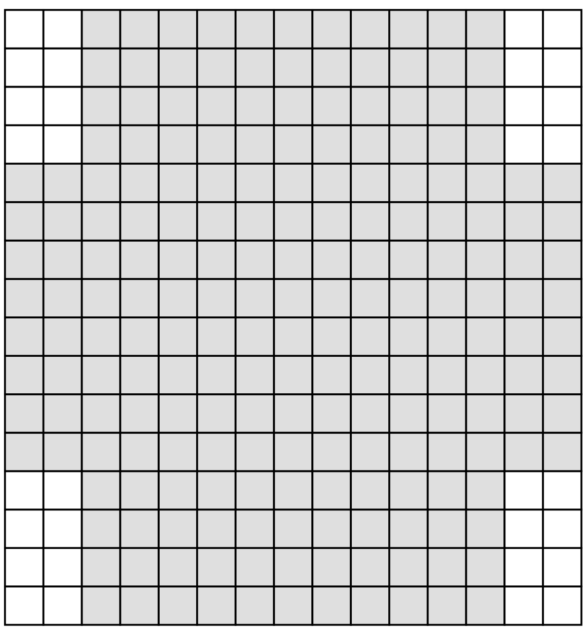
There are some shapes that have a line of symmetry: the large red shape in the middle has a line of symmetry, the blue triangles have a line of symmetry, the green rectangles have two lines of symmetry each, and the yellow squares have four lines of symmetry each. I know this because I used a transparent mirror and they have a perfect reflection or mirror image.

Most of the black paper is covered in the mosaic. I can’t see any repeating geometry patterns in Shirley’s mosaic.

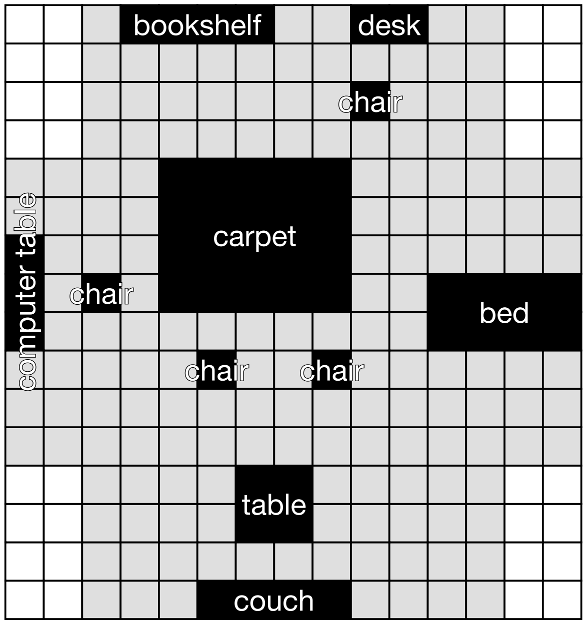
Chapter 8 Task pp. 48–49

Part 1

A. For example:



B.–D. For example:



bed: 8 square units; couch: 4 square units; computer table: 3 square units; bookshelf: 4 square units; desk: 2 square units; table: 4 square units; chairs: 1 square unit for each chair with 4 chairs altogether, so 4 square units in all; carpet: 20 square units

E. For example, I figured out that my room has an area of 208 square units by counting all of the squares. I then added up the total area of all of my furniture. I didn't include the carpet: $8 + 4 + 3 + 4 + 2 + 4 + 1 + 1 + 1 + 1 = 29$ square units. Finally, I subtracted the total square units of the furniture from the total square units of the room: $208 - 29 = 179$ square units of floor space not covered by furniture.

Part 2

For example, one way to go from the bed to the desk is to go 7 squares up and 1 square left. One way to go from the desk to the computer table is to go 1 square down, 4 squares left, 5 squares down, and then 5 squares left. One way to go from the couch to the bookshelf is to go 2 squares left and 15 squares up.

Chapter 9 Task p. 53

A. For example:

No, I don't agree with George because the product is not always larger than the sum. There are some numbers that it doesn't work for (for example, $2 + 2 = 4$ and $2 \times 2 = 4$). Both the product and the sum are the same. Most of the time the product will be greater than the sum because multiplying gives you greater answers than adding (for example, $3 \times 5 = 15$ and $3 + 5 = 8$). 15 is greater than 8.

If one of the numbers is 1, it isn't true either (for example, $10 + 1 = 11$ and $10 \times 1 = 10$). The sum is greater than the product when one of the numbers is 1.

If one of the numbers is 0, it isn't true either (for example, $5 + 0 = 5$ and $5 \times 0 = 0$). The sum is greater than the product when one of the numbers is 0.

B. For example:

I would say that when you choose two numbers, most of the time their product will be greater than their sum, unless one of the numbers is a 0 or 1, and then the sum will be greater than their product.

Chapter 10 Task pp. 54–55

A. For example:

Half of the apple juice is 6 cups because $12 \div 2 = 6$.

Half of the grape juice is 8 cups because $16 \div 2 = 8$.

Half of the ginger ale is 4 cups because $8 \div 2 = 4$.

I know that I am right because when I add the 6 cups of apple juice to another 6 cups of apple juice, I get 12 cups, and that is the amount of apple juice in the recipe ($6 + 6 = 12$). When I add 8 cups of grape juice to another 8 cups, I get 16 cups of grape juice, and that is the amount in the recipe ($8 + 8 = 16$). When I add 4 cups of ginger ale to another 4 cups, I get 8 cups of ginger ale, and that is the amount in the recipe ($4 + 4 = 8$).

B. For example, he will make 18 cups of punch because 6 cups and 8 cups and 4 cups are 18 cups. $6 + 8 + 4 = 18$. When Malik divides the recipe by two, he will get 18 cups of punch altogether.

C. For example, Malik can divide the recipe by four.

12 cups of apple juice divided by 4 is 3 cups because $12 \div 4 = 3$.

16 cups of grape juice divided by 4 is 4 cups because $16 \div 4 = 4$.

8 cups of ginger ale divided by 4 is 2 cups because $8 \div 4 = 2$.

When I add them together, I get 9 cups because $3 + 4 + 2 = 9$.

I know that I am right because when I multiply 3 cups of apple juice by 4, it is 12 cups ($3 \times 4 = 12$), and that is the amount of apple juice in the recipe. When I multiply 4 cups of grape juice by 4, it is 16 cups ($4 \times 4 = 16$), and that is the amount of grape juice in the recipe. When I multiply 2 cups of ginger ale by 4, it is 8 cups ($2 \times 4 = 8$), and that is the amount of ginger ale in the recipe. Malik can divide the recipe by 4 and he will get 9 cups of punch altogether.

Chapter 11 Task pp. 66–67

A. Pyramids and prisms will vary. For example, refer to the picture of the dog on Student Book page 282.

B. For example, my pet's name is Pongo.

Identification tag:	
Name:	Pongo
Type of dog:	Dalmation
License number:	12345
Owner:	Student's Name
Address:	Student's Address
Phone number:	Student's Phone Number

C. For example, my pet's shape is a square-based pyramid because it is a 3-D shape with a flat base. The other faces are triangles that meet at a vertex. Pongo has four triangle faces and one square face. He has eight edges and five vertices.

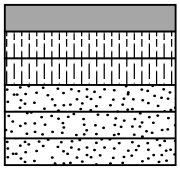
D. For example, I estimate the mass of Pongo to be 50 g.
For example, I measured the mass of Pongo using balance scales and masses. I put Pongo in one side and the small masses in the other side. When it balanced and both sides of the scale were even, I added up the mass in the other side and it was 30 grams.

E. For example, I compared the mass of Pongo with the mass of Jonathon's pet, Rocco. I think Pongo's mass is greater because he is a bigger pet, and when I lift both of them up, he feels heavier than Rocco. I put Pongo on one side of the balance scales and Rocco on the other, and Pongo's side was lower because he is heavier than Rocco. Then I measured the mass of Rocco the same way I did for Pongo, using the balance scales and masses. Rocco had a mass of 25 grams, or 25 g. Pongo's mass is greater than Rocco's.

Chapter 12 Task pp. 50–51

Part 1

A. Answers will vary. For example:



$\frac{1}{6}$ of the closet is shown by 1 out of 6 parts of the closet.

$\frac{2}{6}$ of the closet is shown by 2 of the 6 parts of the closet.

$\frac{3}{6}$ of the closet is shown by 3 out of the 6 parts of the closet.

B. For example, the closet will need more than two shelves because it is divided into more than two parts.

C. For example, the closet could have six shelves because it is divided into six equal pieces. $\frac{1}{6}$ is for toys and trucks, so one shelf can be for toys and trucks. $\frac{2}{6}$ is for board games, so two shelves are for board games. $\frac{3}{6}$ is for other toys, so three shelves are for other toys. When you add that up, you get six shelves ($1 + 2 + 3 = 6$).

Part 2

D. For example:

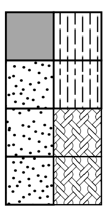
$\frac{1}{8}$ of the closet is for stuffed animals.

$\frac{3}{8}$ of the closet is for dolls and doll clothes.

$\frac{2}{8}$ of the closet is for puzzles.

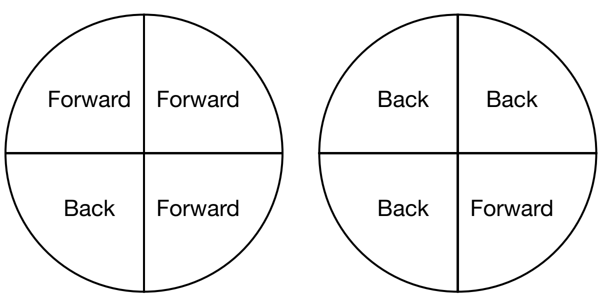
$\frac{2}{8}$ of the closet is for board games.

E. For example:



Chapter 13 Task pp. 44–45

A.



B. 15 times, 5 times (for spinners in prompt A).

C. For example, using spinners in prompt A:

Forward	Back
𝍸 𝍸 ||||	𝍸 |

predicted 15 times, spun 14 times

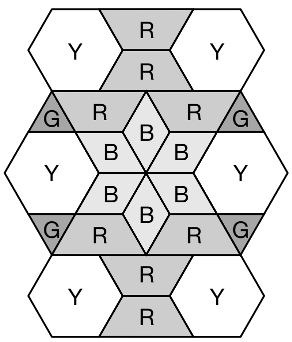
Forward	Back
𝍸 |||	𝍸 𝍸 ||

predicted 5 times, spun 8 times

- **D.** The first spinner matches its description because it says it is more likely to land on forward. Because forward takes up more than twice as much space on the spinner as back, you are more likely to land on forward. The second spinner matches its description because it says it is more likely to land on back. Back takes up more than twice as much space on the spinner as forward, so you are more likely to land on back.
- **E.** Yes; I had to go forward at the start of the game, so I used the first spinner because it was more likely to land on forward, and it did. After I went to the Fire Pit, I had to go back to get to the main path, so I used the second spinner because it was more likely to land on back, which it did.

Chapter 14 Task p. 60

- **A.** Students' pattern block designs will vary.
- **B.** For example:



- **C.** Sample answer based on the design in Part B:

  I used many flips in my design.

  The red trapezoid at the very top of the design has a flip right below it.

  The red trapezoid at the very bottom of the design has a flip right above it.

  The red trapezoid right beside the green triangle in the upper left of the design has a flip to the right of it.

  The green triangle in the upper left of the design has a flip below it, underneath the yellow hexagon.
- **D.** Sample answer based on the design in Part B:

  I used many slides in my design. The yellow hexagon in the top left of the design has a slide to the right of it on the other side of the two red trapezoids. The yellow hexagon in the middle left of the design has a slide to the right of it on the other side of the blue rhombuses, and the yellow hexagon in the bottom left of the design has a slide to the right of it on the other side of the two red trapezoids. The green triangle in the upper left of the design has a slide to the right of it on the other side of the design.
- **E.** Sample answer based on the design in Part B:

  The blue rhombus in the middle of the three rhombuses in the bottom row of rhombuses, the one pointing down, is a $\frac{1}{2}$ turn clockwise from the blue rhombus in the middle of the top row of rhombuses, the one pointing up. You could also say that it is $\frac{1}{4}$ turn counterclockwise.
- **F.** Sample answer based on the design above:

  I made my design by starting with the six blue rhombuses in the middle that look like a flower.

  Then I added the trapezoids, hexagons, and triangles around the rhombus design.

  Then I added the flipped trapezoids with hexagons on either side and put that part of the design above and below what I already had.

  My design is also symmetrical with two lines of symmetry.