

$8+8+8+8=32$ ADDITION
 $8 \times 4 = 32$ MULTIPLICATION

$8 \times 4 = 32$ MULTIPLICATION
 $8+8+8+8=32$ ADDITION

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a cross-curricula project



Warrenton, NC



North
Carolina
Arts
Council
www.NCArts.org

This project was supported by the
N.C. Arts Council,
a division of the Department of Natural & Cultural Resources.
www.NCArts.org

WELCOME TO QUILTS & MATH WE WILL COVER:

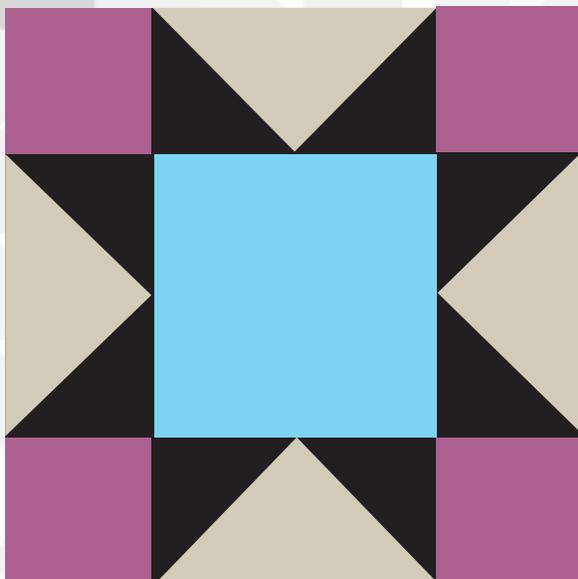
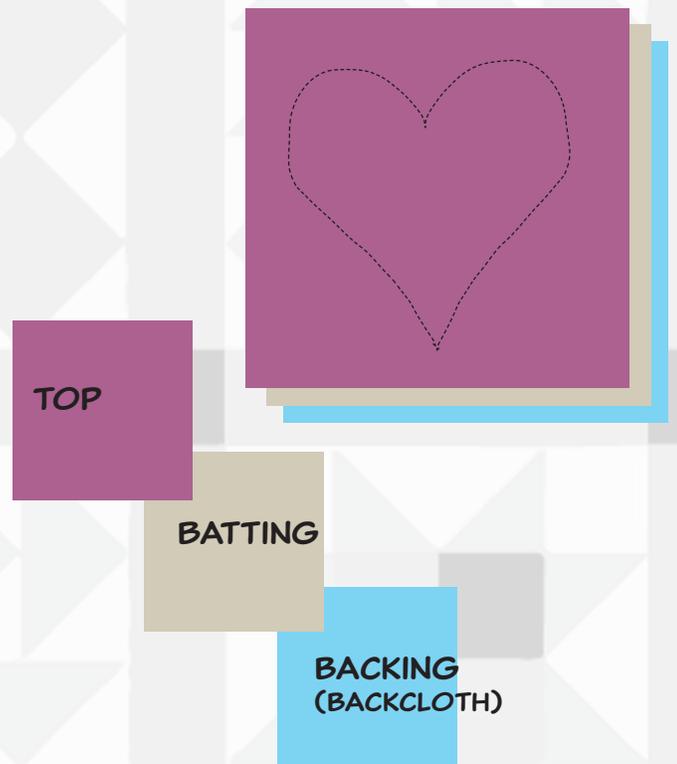
- ✦ THE RELATIONSHIP OF ADDITION AND MULTIPLICATION USING QUILTS AND QUILT BLOCKS.
- ✦ THE GEOMETRY OF QUILTS
- ✦ QUILTS IN STORIES AND HISTORY.



WHAT IS A QUILT?

A QUILT INCLUDES THREE LAYERS OF FABRIC -- A TOP, A MIDDLE, AND A BACK.

- ✦ THE TOP IS SOMETIMES A WHOLE PIECE OF CLOTH OR A PATCHWORK OF PATTERNS AND DESIGNS.
- ✦ THE MIDDLE LAYER, CALLED BATTING, ADDS WARMTH. COTTON, WOOL, OR OTHER FIBERS SERVE AS THE BATTING.
- ✦ THE BACKCLOTH, ADDED BEFORE THE THREE LAYERS ARE STITCHED TOGETHER, MAKES A QUILT.



GEOMETRY IN A QUILT

QUILT BLOCKS CAN HAVE SMALL SQUARES, LARGE SQUARES, SOME HAVE SMALL AND LARGE TRIANGLES. THEY CAN ALSO HAVE RECTANGLES, CIRCLES, HEXAGONS, OCTAGONS OR PENTAGONS.

THERE ARE MANY TYPES OF QUILTS

PATCHWORK QUILTS



ART QUILTS



APPLIQUE QUILTS



STORY QUILTS

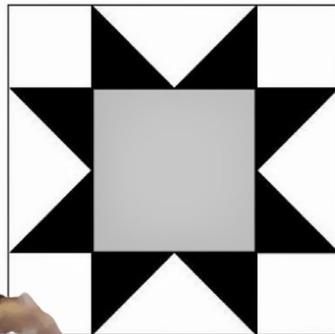


SOME QUILTS COMBINE SEVERAL TECHNIQUES

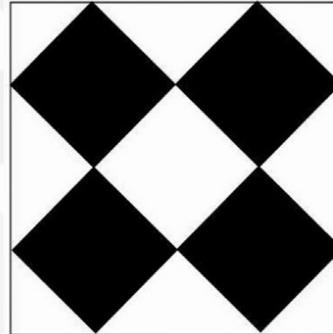


QUILT BLOCKS HAVE NAMES LIKE WE HAVE NAMES

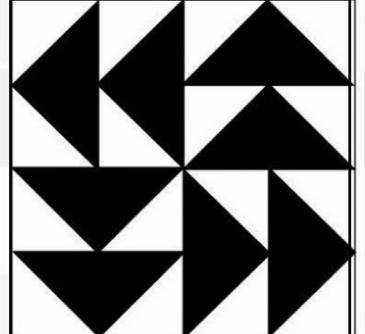
NORTH STAR



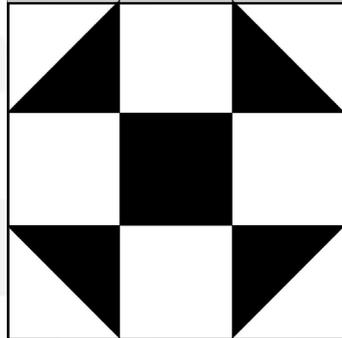
CROSSROADS



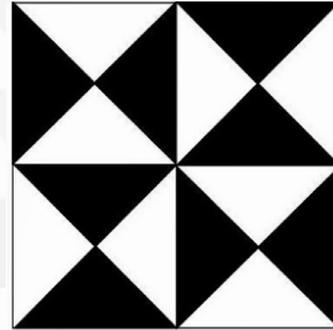
FLYING GEESE



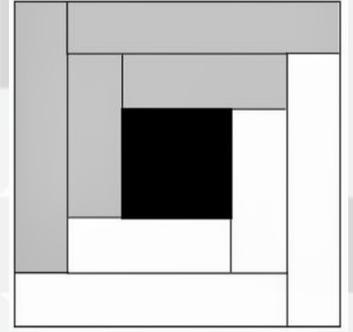
SHOO FLY



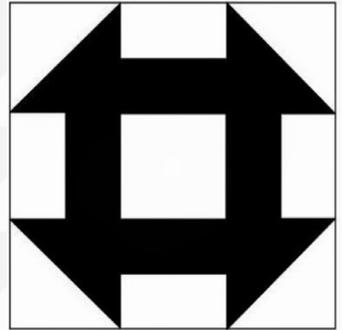
BOW TIE



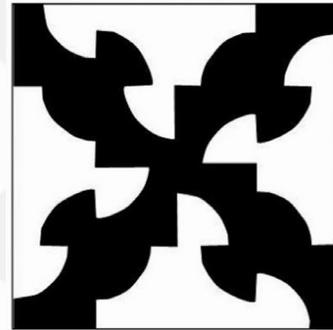
LOG CABIN



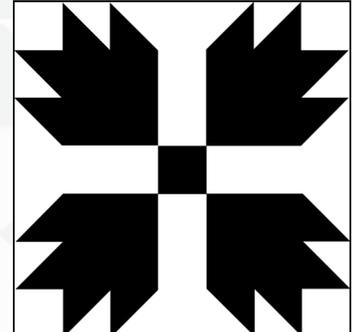
MONKEY WRENCH



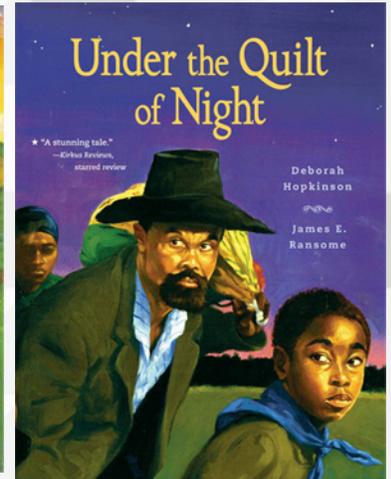
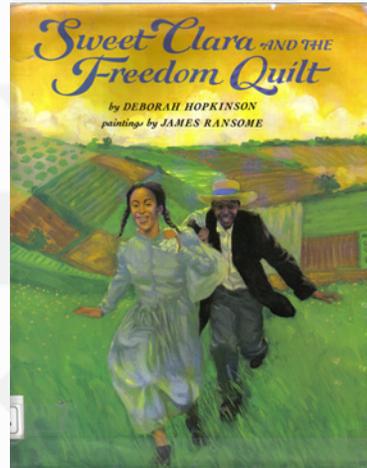
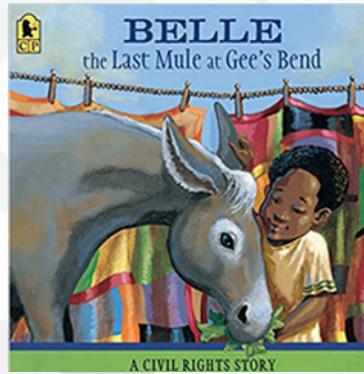
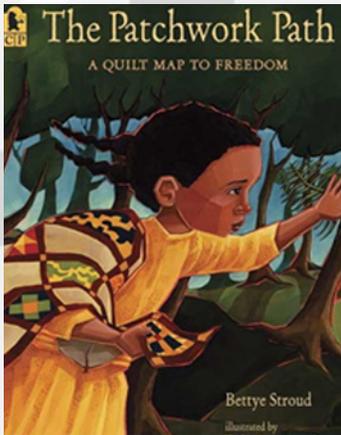
DRUNKARD'S PATH



BEAR CLAW



HERE ARE SOME STORIES ABOUT QUILTS AND QUILTING



**A PATCHWORK PATH: A QUILT MAP TO FREEDOM
BY BETTYE STROUD
[HTTPS://YOUTU.BE/CPXW8MOIXTG](https://youtu.be/cpxw8moixtg)**

**BELLE, THE LAST MULE AT GEE'S BEND
BY CALVIN ALEXANDER AND BETTYE STROUD**

**I LAY MY STITCHES DOWN: POEMS OF AMERICAN SLAVERY
BY CYNTHIA GRADY**

**STICHIN' AND PULLIN' A GEE'S BEND QUILT
BY PATRICIA C. MCKISSACK
[HTTPS://YOUTU.BE/YOPJ JVXYVFS](https://youtu.be/yopjvxyvfs)**

**SWEET CLARA AND THE FREEDOM QUILT
BY DEBORAH HOPKINSON
[HTTPS://YOUTU.BE/54MXQYXB_DS](https://youtu.be/54mxqyxb_ds)**

**UNDER THE QUILT OF NIGHT
BY DEBORAH HOPKINSON
[HTTPS://YOUTU.BE/UHVA2QUSA_U](https://youtu.be/uhva2qusa_u)**

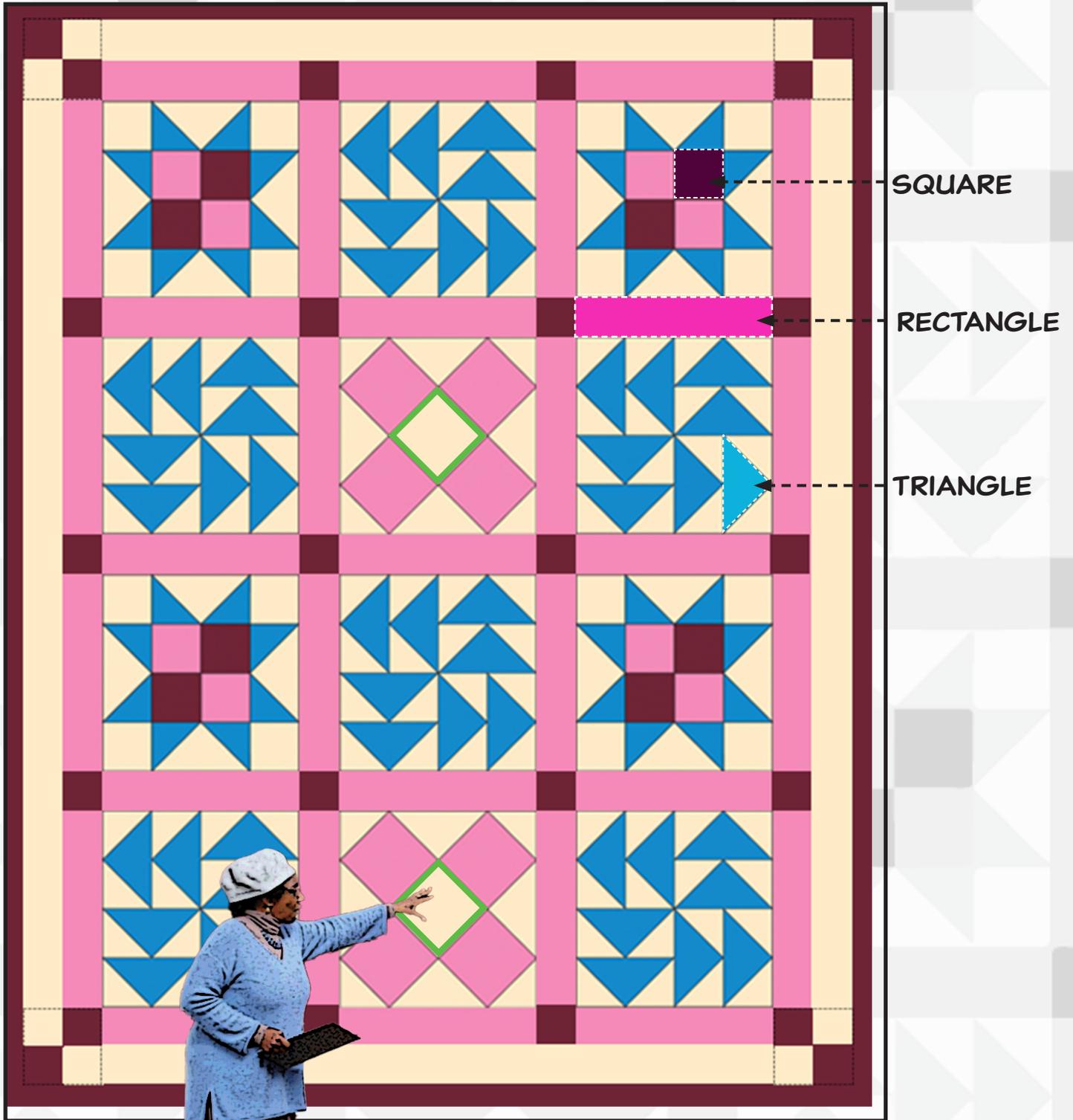
**THE SECRET TO FREEDOM
BY MARCIA VAUGHAN
[HTTPS://YOUTU.BE/9A-XREEONEE](https://youtu.be/9a-xreeonee)**



WHAT IS YOUR QUILT STORY?

QUILTS CAN TEACH ABOUT GEOMETRY, ADDITION, MULTIPLICATION

LOOK AT THE QUILT BELOW, WHAT SHAPES DO YOU SEE?



HERE IS A WARMUP QUESTION AS WE GET READY
TO DO SOME MATH.

HOW MANY LARGE BEIGE SQUARES
DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?

NOW, LET'S DO SOME MATH!

GET YOURSELVES INTO GROUPS OF THREE.
JUST FOR FUN, DECIDE ON A NAME FOR YOUR GROUP.
(MAYBE USE THE NAME OF A QUILT BLOCK,
"THE BEAR CLAWS")

EACH GROUP WILL HAVE A SCRIBE, AN OBSERVER,
AND A PRESENTER.

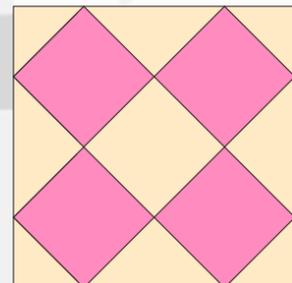
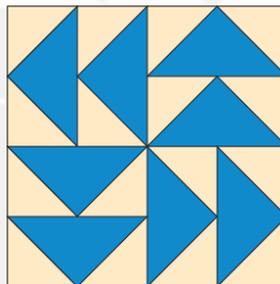
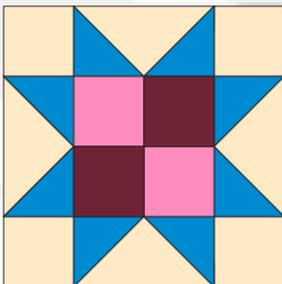
THE SCRIBE WILL TAKE THE NOTES AND WRITE DOWN
THE ANSWERS.

THE OBSERVER WILL LOOK CAREFULLY AT THE QUILT
AND COUNT THE BLOCKS.

THE PRESENTER WILL REPORT TO THE REST OF THE
GROUP THE RESPONSES TO THE QUESTIONS.

EACH GROUP WILL FIND SOLUTIONS FOR AT LEAST
TWO QUESTIONS, AND THE PRESENTER WILL SHARE
THE SOLUTIONS WITH THE GROUP.

HAVE FUN!



**HOW MANY LARGE BLUE TRIANGLES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?**

**HOW MANY LARGE PINK SQUARES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?**

**HOW MANY SMALL BLUE TRIANGLES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?**

**HOW MANY SMALL BEIGE SQUARES?
HOW MANY WAYS CAN YOU COUNT THEM?**

**HOW MANY MEDIUM-SIZED PINK SQUARES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?**

**HOW MANY SMALL BEIGE TRIANGLES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?**

**HOW MANY MEDIUM-SIZED MAROON SQUARES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?**

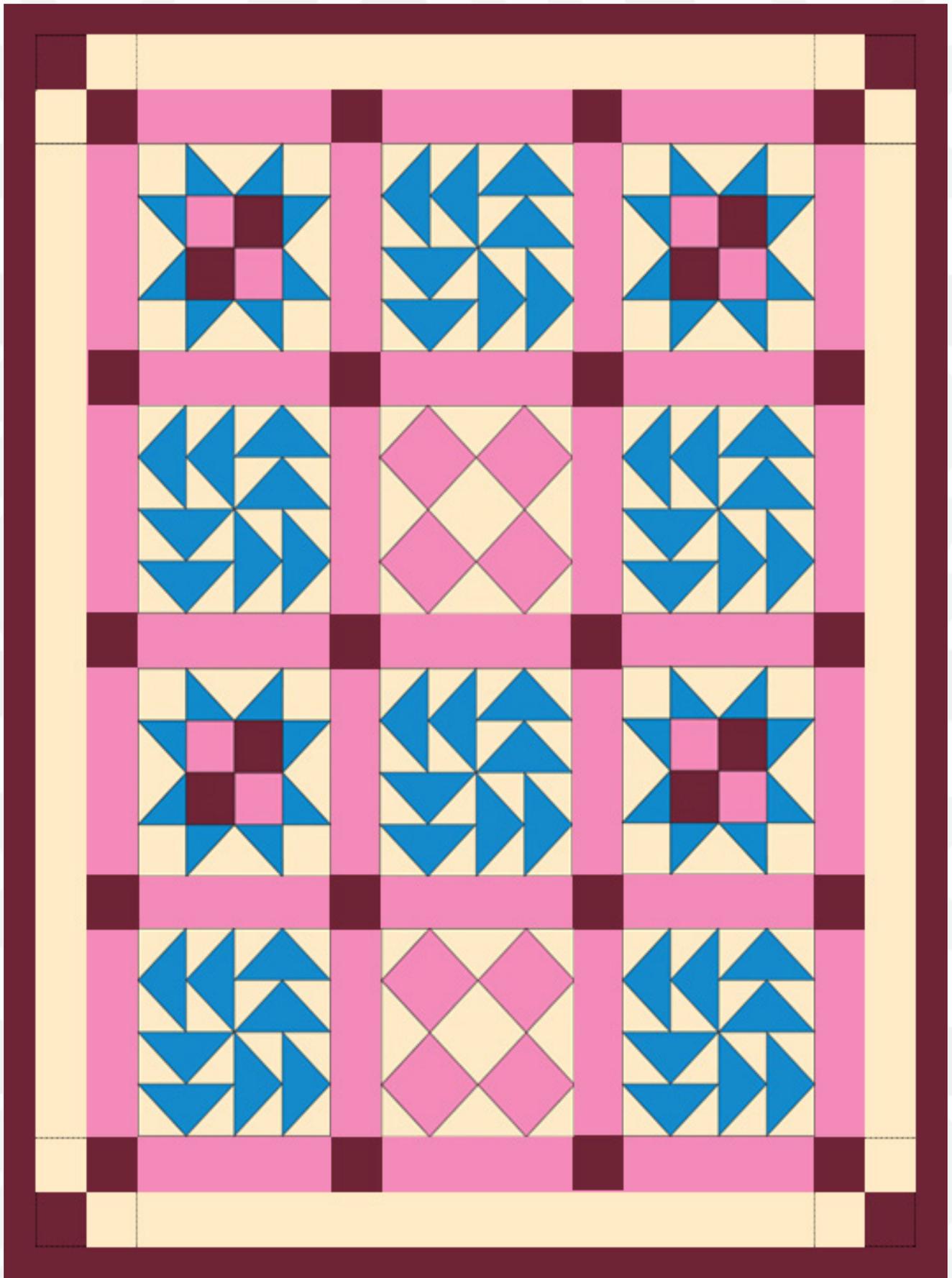
**HOW MANY LARGE BEIGE TRIANGLES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?**

**HOW MANY SMALL MAROON SQUARES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?**

**HOW MANY PINK RECTANGLES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?**

**BONUS QUESTION
HOW MANY BEIGE RECTANGLES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?**





HOW MANY SOLUTIONS DID YOU FIND?

HOW MANY LARGE BLUE TRIANGLES
DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?

THERE ARE 48 LARGER BLUE TRIANGLES
 $8 + 8 + 8 + 8 + 8 + 8 = 48$
OR
 $8 \times 6 = 48$

HOW MANY LARGE PINK SQUARES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?

THERE ARE 8 MEDIUM PINK SQUARES
1, 2, 3, 4, 5, 6, 7, 8,
OR
 $4 \times 2 = 8$

HOW MANY SMALL BLUE TRIANGLES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?

THERE ARE 32 SMALL BLUE TRIANGLES
2, 4, 6, 8, 10, 12, 14, . . . 28, 30, 32
 $8 + 8 + 8 + 8 = 32$
OR
 $8 \times 4 = 32$

HOW MANY SMALL BEIGE SQUARES?
HOW MANY WAYS CAN YOU COUNT THEM?

THERE ARE 16 SMALL BEIGE SQUARES
1, 2, 3, 4, 5, 6, 7, . . . 13, 14, 15, 16
OR
 $4 \times 4 = 16$

HOW MANY MEDIUM-SIZED PINK SQUARES
DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?

THERE ARE 8 MEDIUM PINK SQUARES
1, 2, 3, 4, 5, 6, 7, 8,
OR
 $2 \times 4 = 8$

HOW MANY SMALL BEIGE TRIANGLES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?

THERE ARE 96 SMALL BEIGE TRIANGLES
1,2,3,4,5,6,7,8,9...94,95,96
 $2 \times 8 = 16$
 $16 + 16 + 16 + 16 + 16 + 16 = 96$
OR
 $16 \times 6 = 96$

HOW MANY MEDIUM-SIZED MAROON SQUARES
DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?

THERE ARE 8 MEDIUM SIZES MAROON
SQUARES
1, 2, 3, 4, 5, 6, 7, 8,
OR
 $2 \times 4 = 8$

HOW MANY LARGE BEIGE TRIANGLES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?

THERE ARE 2 BLOCKS WITH 4 LARGE BEIGE TRIANGLES, AND
THERE ARE 4 BLOCKS WITH 4 LARGE BEIGE TRIANGLES.
 $(2 \times 4 = 8) + (4 \times 4 = 16)$
 $8 + 16 = 24$

HOW MANY SMALL MAROON SQUARES
DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?

THERE ARE 24 SMALL MAROON SQUARES
 $4 \times 5 = 20 +$
1,2,3,4
 $20 + 4 = 24$

HOW MANY PINK RECTANGLES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?

THERE ARE 31 PINK RECTANGLES
1, 2, 3, 4, 5, 6, 7 . . . 13, 14, 15 TOTAL 15 AND
1, 2, 3, 4, 5, 6, 7 . . . 14, 15, 16 = TOTAL 16 AND
 $15 + 16 = 31$
OR
 $(5 \times 3 = 15) + (4 \times 4 = 16) = 31$ AND $15 + 16 = 31$

BONUS QUESTION

HOW MANY BEIGE RECTANGLES DO YOU SEE?
HOW MANY WAYS CAN YOU COUNT THEM?



**THIS PROJECT IS DEDICATED TO PORTIA HARRIS HAWES, A FOUNDING MEMBER
OF THE HERITAGE QUILTERS, WARRENTON, NC.
PORTIA HAWES MADE THE QUILT USED FOR THIS PROJECT.**