# Assessment : End-of-Unit-Assessment

## Problem 1

Students are given a situation where they do not know the number of objects and need to decide whether they can conclude that certain quantities are odd or even. They only know that Han has the same number of pencils as Priya but do not know how many pencils Han and Priya each have. When they put their pencils together, it is an even number because each of Han's pencils can be paired with one of Priya's pencils. Response A could also be true as Han could have 4 pencils. It is also possible that Priya could have, for example, 5 pencils so response B could be true. Students who choose response D or fail to choose response E are likely not thinking about the given information that Han and Priya have the same number of pencils. Students who select C have probably not read the question carefully.

## Statement

Han and Priya each have some pencils. Han has the same number of pencils as Priya. Select **3** statements which could be true.

 A. Han has an odd number of pencils.

 B. Priya has an even number of pencils.

 C. Han has an odd number of pencils and Priya has an even number of pencils.

 D. Han and Priya together have an odd number of pencils.

 E. Han and Priya together have an even number of pencils.

## Solution

["A", "B", "E"]

## Aligned Standards

2.OA.C.3

## Problem 2

Students select expressions that represent the number of squares in an array and they also decide whether there are an even number or odd number of squares in the array. Students who select B and C instead of A and D may be counting the columns and rows incorrectly or confusing the number of squares in the rows and columns with the number of rows and columns. Students who select E instead of D may be noticing that there are an odd number of squares in each row or they may have tried to pair up the squares and not been careful and precise.

## Statement

Mai split the rectangle into equal-size squares. Select **3** correct statements about the diagram.
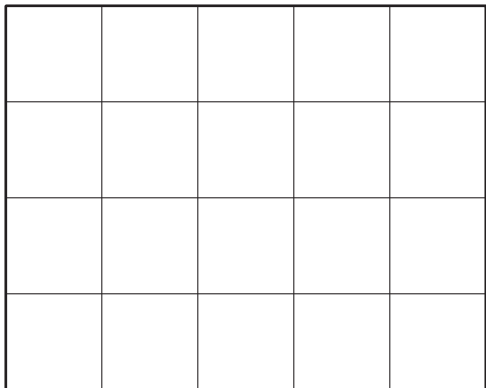
A. The total number of equal-size squares is $5 + 5 + 5 + 5$ .

B. The total number of equal-size squares is $4 + 4 + 4 + 4$ .

C. The total number of equal-size squares is $5 + 5 + 5 + 5 + 5$ .

D. The total number of equal-size squares is $4 + 4 + 4 + 4 + 4$ .

E. The total number of equal-size squares in the array is even.

F. The total number of equal-size squares in the array is odd.

## Solution

["A", "D", "E"]

## Aligned Standards

2.OA.C.3, 2.OA.C.4

## Problem 3

Students divide a rectangle into equal rows and columns with the scaffold of regularly spaced tick marks on the side of the rectangle. Then they find the number of squares the rectangle is divided into. A student could subdivide the rectangle further into even smaller squares. This would then influence their answer to the second question.
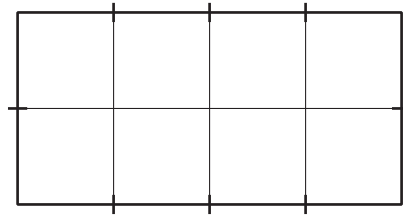
## Statement

1. Draw lines so the rectangle is completely filled with equal-size squares.
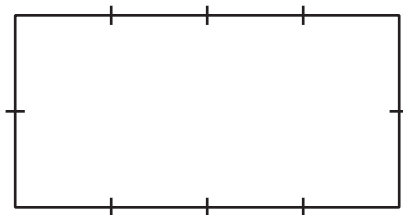


2. How many equal-size squares are there?
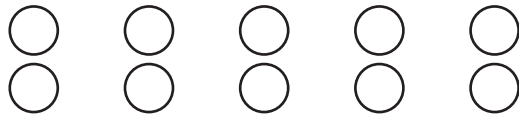
## Solution



1.

2.  8

## Aligned Standards

2.G.A.2, 2.OA.C.4

## Problem 4

Students identify whether there are an even or an odd number of circles in an image. They can do this in several ways including making pairs, counting them, or looking for structure. In each case, there is a structural way to see whether or not the circles can all be matched with a partner.

## Statement

For each image, determine whether there are an even or odd number of circles. Explain your reasoning.



1.
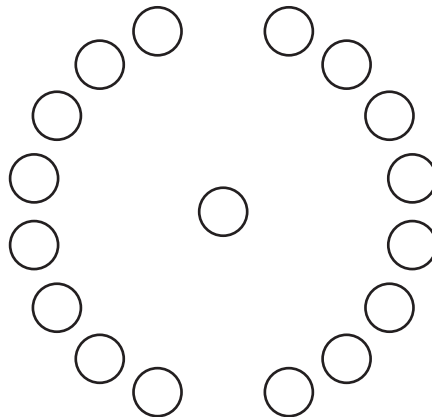


2.

## Solution

1.  Even, because each circle in the top row matches with a circle in the bottom row. The circles come in pairs.

2.  Odd, because each circle on the left has a partner on the right and then the circle in the middle is left over.

## Aligned Standards

2.OA.C.3

## Problem 5

Students decide whether a number is even or odd. When the number is even, they write it as a sum of equal addends. While students may draw a picture in order to solve these problems, at the end of the unit they may also be able to just "see" whether the numbers are even or odd. Give students access to connecting cubes or counters to help decide if the numbers are even or odd.

## Statement

For each number, decide whether the number is even or odd. Write each even number as the sum of 2 equal addends.

1. 6
2. 11
3. 14

## Solution

1. even, $6 = 3 + 3$
2. odd
3. even, $14 = 7 + 7$

## Aligned Standards

2.OA.C.3

## Problem 6

Students decide if a collection of pattern blocks can be split into two identical groups. It is important for them to analyze each individual shape and make sure that there are an even number in each case. Some students may answer the final question incorrectly, giving Jada and Diego the same *number* of pattern blocks but different blocks.

## Statement

Here are some pattern blocks that Jada and Diego want to share.
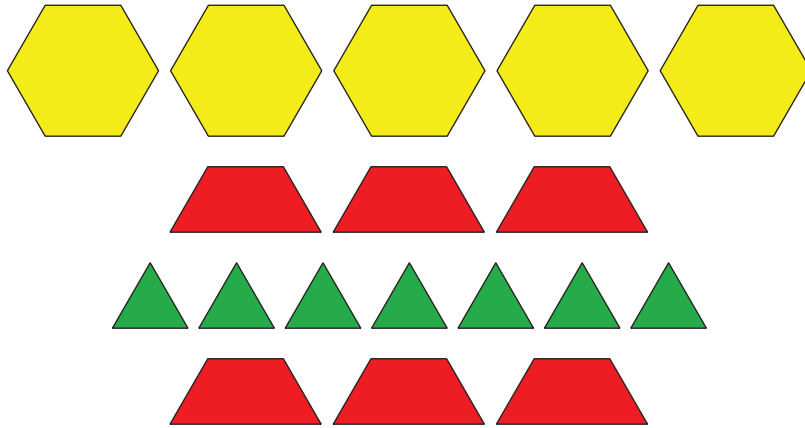
1. Explain why there are an even number of trapezoids.

2. Jada says that she and Diego can share the pattern blocks so they each have 9 pattern blocks. Explain why Jada is correct.

3. Can Jada and Diego share all of the pattern blocks so that they each have the same set of pattern block shapes? Explain or show your reasoning.

## Solution

1. There are 3 pairs of trapezoids.

2. Jada can have all of the triangles and two trapezoids. That makes 9 shapes. Han can have 4 trapezoids and all of the hexagons. That makes 9 shapes too.

3. No. Jada and Diego can each have 3 trapezoids. But there are an odd number of triangles and an odd number of hexagons so they can not have the same number of triangles and hexagons. They can each have 3 triangles and 2 hexagons but there is one triangle and one hexagon left over.

## Aligned Standards

2.OA.C.3