

# THE TRUST FOR PUBLIC LAND

## MATH PLAYGROUND PROGRAM

### GRADE 3



## GRADE 3 PLAYGROUND DELIGHTFUL DIVISION 3.OA.7



*Practice your delightful division skills today in the playground.*

1a. How many steps does it take you to walk around the running track?

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b. Round it to the nearest ten.

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c. Divide it by 10.

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2a. How many steps does it take you to walk across the diagonal of the running track?

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b. Round it to the nearest 5.

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c. Divide it by 5.

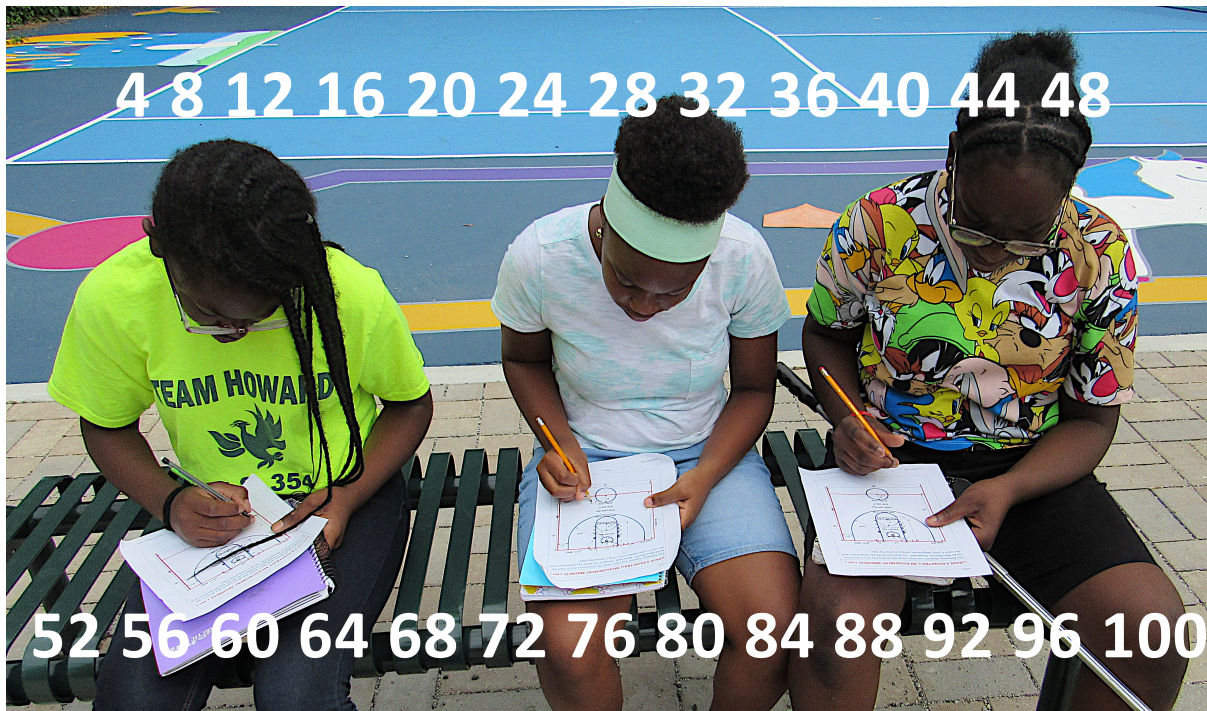
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NAME \_\_\_\_\_

3a. How many girls are in the playground?	
b. Round it to the nearest odd number.	
c. Which numbers can you divide it by with no remainders?	
d. Calculate the quotient using each number.	
4a. How many steps does it take you to walk around the gazebo?	
b. Round it to the nearest even number.	
c. Which numbers can you divide it by with no remainders?	
d. Calculate the quotient using each number.	

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## GRADE 3 PLAYGROUND MULTIPLE MADNESS 3.OA.7



How Many...		Skip Count By This Number Up to 100
benches in the playground?		
ladders or climbing walls in play equipment?		
game tables?		

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How Many...		Skip Count By This Number Up to 100
black squares on the game board?		
corners in the roof of the gazebo?		
boulders?		
find your own object to count		
find your own object to count		

## GRADE 3 PLAYGROUND BENCH GEOMETRY 3.MD.6,7



*There are three types of benches in the playground: (#1) flat benches that stand alone, (#2) flat benches at play tables, and (#3) benches with seat backs. Today we are going to explore the concept of **area** using these three types of benches as examples.*

What is the length of a flat bench seat #1 (from one end of the slats to the other)?

What is the width of #1 bench seat?

What is the area of #1 bench seat?

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How many students in your class can sit comfortably on a #1 bench?	
Calculate the #1 bench seat area per student.	
How much #1 bench seat area is needed for 28 students?	
If there were 15 #1 benches in the playground, how many students could sit comfortably?	
What are the dimensions (length and width) of a #2 bench seats at a play table?	
What is the seat area of a #2 bench?	
Is the #2 bench seat area per student different from the #1 bench seat area?	

NAME \_\_\_\_\_

<p>How does the number of students in your class that can sit comfortably on a #2 bench compare to a #1 bench?</p>	
<p>Are there #3 benches with seat backs in the playground?</p>	
<p>What are the dimensions (length and width) of a #3 bench seat?</p>	
<p>How do the #3 bench seat areas compare to the #1 and #2 bench seats?</p>	
<p>Does the smaller seat area on #3 benches influence how many students can sit comfortably? Explain.</p>	
<p>How does the number of students in your class that can sit comfortably on a #3 bench compare to a #1 and #2 bench?</p>	
<p>If there were 72 bench legs in the playground, how many benches would there be?</p>	

## GRADE 3 PLAYGROUND SHAPE RIDDLES 3.G.1



*Today we will explore shapes in our playground by solving riddles.*

Riddle	What Am I?	Where Am I?
I am a polygon with 3 sides.		
I am 2 lines that never intersect.		
I am a square corner.		
I am a polygon with 4 unequal sides.		
I am a polygon with right angles and 2 different sets of equal sides.		
I am a polygon with right angles and equal sides.		






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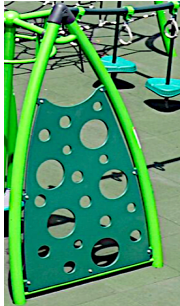
Riddle	What Am I?	Where Am I?
I am not a polygon and have no sides.		
I am a polygon with 5 sides.		
I am a polygon with 6 sides.		
I am a solid figure with 6 rectangular faces.		
I am a solid figure with 6 sides that meet at a point.		
I am a solid figure with straight parallel sides. My top and bottom are in the shape of a circle.		
I am a shape that is repeated many times without gaps or overlaps.		
<b>Find other geometric shapes in the playground, write your own riddles and solve them.</b>		

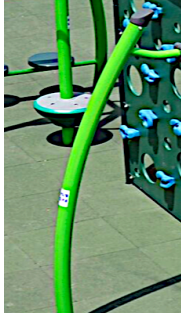
## GRADE 3 PLAYGROUND SHAPES & CURVED PLANES 3.G.1




Any flat closed 2-dimensional shape with 3 or more straight sides is a **polygon**. Any 3-dimensional solid shape with flat polygon faces, straight edges and sharp corners is a **polyhedron**. What happens when these shapes are on curved surfaces? Today we will use our playground to explore.

Shape Image	What Are The Attributes Of This Shape?
	
	
	
	
	

	<p>Is this a triangle? Explain.</p>
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	<p>Is this a cylinder? Explain.</p>
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	<p>Is this a rectangle? Explain.</p>
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Walk around the play equipment in your playground and look for polygons and polyhedrons that have been changed by curved surfaces. Discuss the following with your classmates:

- The surface of the earth is curved, so can any shape really be flat?
- What happens to flat shapes on a map when represented on a globe?
- What would a triangle look like if it was stretched onto a sphere?
- What would a cylinder look like if it was stretched onto a sphere?
- What would a rectangle look like it was stretched onto a sphere?
- Can any two points on a curved surface be joined by a straight line?
- What other observations can you make about lines and shapes stretched onto spheres?
- How did this activity change your understanding of the geometry of polygons and polyhedrons?






**GRADE 3 FALL PLAYGROUND LEAF LESSON** 3.MD.7a

*In the fall, when the leaves start falling from the trees, have students collect leaves in the playground. (Because the shade trees in the playground are alike, students should have similarly sized leaves.) When students return to class, they will do an activity to estimate the area of each leaf using both inch and centimeter graph paper.*

1. Divide the class into pairs.
2. Using 1-cm graph paper and 1-inch graph paper, have students trace the outline of their leaf on both grids.
3. Have students count the number of complete and partial squares covered by each leaf on each grid.
4. Record each team's results on the board.
5. Discuss the strategies students used to add up partial squares.
6. Discuss the differences among the team results.
7. Discuss the differences between the results using the centimeter grid versus the inch grid.




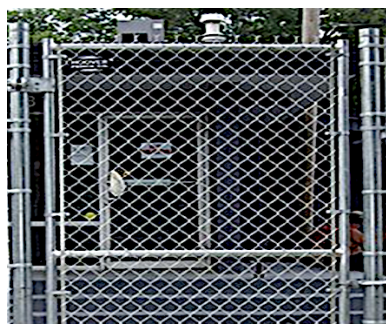
## GRADE 3 PLAYGROUND POINT SCORE 3.OA.3-7

*TPL playgrounds have many common features. Today, we will practice multiplication in our playground, using these features. Calculate our playground's total score, based on the following:*

<b>EACH...</b>	<b>Total Points</b>	<b>EACH...</b>	<b>Total Points</b>
 <p><b>set of climbing ropes = 8 points</b></p>		 <p><b>game table = 9 points</b></p>	
 <p><b>climbing wall = 5 points</b></p>		 <p><b>raised planter = 7 points</b></p>	
 <p><b>lane of running track = 2 points</b></p>		 <p><b>bench with back = 4 points</b></p>	

EACH...	Total Points	EACH...	Total Points
 <p data-bbox="215 800 537 835"><b>set of ladders = 9 points</b></p>		 <p data-bbox="846 779 1179 846"><b>can in recycling areas = 6 points</b></p>	
 <p data-bbox="215 1287 526 1323"><b>tree in paver = 9 points</b></p>		 <p data-bbox="846 1272 1195 1308"><b>basketball court = 8 points</b></p>	
 <p data-bbox="228 1734 500 1770"><b>flat bench = 7 points</b></p>		 <p data-bbox="857 1713 1187 1787"><b>column of the gazebo= 3 points</b></p>	





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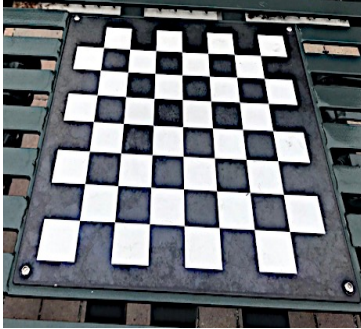

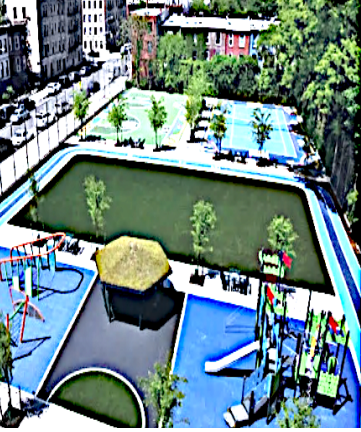

EACH...	TOTAL POINTS	EACH...	TOTAL POINTS
 <p>pod in play equipment = 2 points</p>		 <p>student in playground = 1 point</p>	
 <p>ping pong table = 9 points</p>		 <p>gate entrance to playground = 3 points</p>	

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

GRAND TOTAL POINTS = \_\_\_\_\_

## GRADE 3 PLAYGROUND SHAPES AS FRACTIONS 3.G.2

	<p>a. What fraction of all of the circles are large ones?</p> <p>b. What fraction are small circles?</p>	<p>a.</p> <p>b.</p>
	<p>a. What fraction of the hopscotch is blue?</p> <p>b. What fraction is red?</p>	<p>a.</p> <p>b.</p>
	<p>a. What fraction of the pavement stones is horizontal?</p> <p>b. What fraction is vertical?</p>	<p>a.</p> <p>b.</p>
	<p>a. What fraction of the sides of the gazebo has benches?</p> <p>b. What fraction does not?</p>	<p>a.</p> <p>b.</p>

	<p>a. What fraction of the tables has game boards?</p> <p>b. What fraction does not?</p>	<p>a.</p> <p>b.</p>
	<p>a. What fraction of the playground is surrounded by fences?</p> <p>b. What fraction is not?</p>	<p>a.</p> <p>b.</p>
	<p>a. Estimate the fraction of the playground that is turf.</p> <p>b. Estimate the fraction of the playground that has trees.</p>	<p>a.</p> <p>b.</p>
	<p>What fraction of the students in the playground are having a good time learning math?!</p>	

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## GRADE 3 PLAYGROUND LESS THAN 1-FOOT HUNT 3.MD.4

*Using your ruler, find and measure objects in the playground that are less than one foot long.*

<b>Where</b>	<b>What Did You Find?</b>	<b>How Long Is It?</b>
 Play Equipment		
 Running Track		
 Pavement		
 Bench		
 Basketball Court		

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Where	What Did You Find?	How Long Is It?
 <p>Trees</p>		
 <p>Student Color Seal Art</p>		
 <p>Game Table</p>		
 <p>Fence</p>		

## GRADE 3 SKIP COUNTING IN THE PLAYGROUND 3.OA.1



*Skip count by 5's.*

Where	How Many?
Around the track	
Length of the interior turf pod	
Width of the interior turf pod	
Diagonal of the interior turf pod	
Length of the playground	
Width of the playground	

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Around the basketball court	
Length of the basketball court	
Width of the basketball court	
Diagonal of the basketball court	
Around the pad under the play equipment	

Write and solve your own skip counting game for the playground.