

Most recent update: June 5, 2020

## RightStart™ Mathematics

### Corrections and Updates for Level G/Grade 6 Lessons and Worksheets, second edition

LESSON/WORKSHEET/SOLUTIONS	CHANGE DATE	CORRECTION OR UPDATE
Lesson 9	10/09/2018	Hexagram is a special six-point star based on a hexagon.
Worksheet 10-3 Solutions 10-3	10/09/2018	Hexagram's definition is a closed six-point figure.
Worksheet 15	10/10/2018	Measurements for the rectangles are off. See attached PDF.
Worksheet 27-1	11/20/2018	Lengths for the lines to measure for Questions 6-10 are off slightly. See attached PDF.
Worksheet 28	11/20/2018	Measurements of the rectangle and centimeter lines are off slightly. See attached PDF.
Solutions 32	12/17/2019	The second equation for Problem 1B should be $4 \times 4 - 1 = 15$ , not $4 \times 4 = 16$ . The second equation for Problem 1C should be $5 \times 5 - 1 = 24$ , not $5 \times 5 = 25$ .
Worksheet 33-2 Solutions 33-2	01/03/2019	Question 14 answer is Worksheet 32, not Worksheet 31. Question 15 has been added. See attached PDF.
Lesson 35	01/03/2019	The wording for the paragraph under Worksheet 35-1 has changed. It now reads, "This worksheet will have you measuring in hundredths. Your ruler only has markings for tenths, so you will be estimating the hundredths measurement. Use your best judgement to make your estimate. Complete the worksheet now."
Worksheet 35-1	11/20/2018	Question 4 gives the wrong width measurement. It should be 2.493, not 2.927. See attached PDF.
Solutions 35-1	01/03/2019	The second calculation in Problem 1 should be $A = 2 \times 1 = 2 \text{ in}^2$ , not $A = 3 \times 1 = 3 \text{ in}^2$ .
Lesson 37	01/03/2019	The list of materials needs to include the Casio Calculator fx-300MS.
Lesson 38	11/19/2018	In the first paragraph and the second to last paragraph, the worksheet referenced should be Worksheet 36, not 34 and 35.
Worksheet 39-1 Solutions 39-1	03/27/2019	Changed some of the matching terms and Questions 10 and 11. See attached PDFs.
Solutions 39-3	01/03/2019	Question 25 measurements should be 38 mm, not 39, and 48 mm, not 49. Area calculates to 1824 mm <sup>2</sup> , not 1911 mm <sup>2</sup> .
Solutions 39-4	01/03/2019	Question 31-33 measurement should be 74 mm, not 73. Area calculates to 4921 mm <sup>2</sup> , not 4854.5 mm <sup>2</sup> .
Solutions 41-3	01/03/2019	Question 32 measurements should be 52 mm, not 53, 33 mm, not 32, and 29 mm, not 28. Perimeter calculates to 230 mm, not 229 mm. Question 34 measurements should be 2.0 in., not 2.1. Perimeter calculates to 7.3 cm, not 7.4 cm.
Lesson 44	11/25/2019	In the second heading, third paragraph should read "Using symbols, the area of the hexagon is twice the area..." not octagon.
Solutions 44-2	11/25/2019	The last solution, #6, should read "A (rectangle)", not A (square).
Worksheet 50-2 Solutions 50-2	01/03/2019	An additional question has been added. See attached PDFs.
Worksheet 50-2	12/17/2020	The solutions, rather than the worksheet itself, was included in the worksheets book and document See attached PDF.
Worksheet 53-1	01/03/2019	Changed the second definition listed to "quadrilateral with one and only one set of parallel lines", not "parallelogram with one and only one set of parallel lines. See attached PDF.
Solutions 53-1	01/03/2019	Problem 10 measurement should be 2.4 in., not 2.5. Perimeter calculates to 6.1 in, not 6.2 in and 15.5 cm, not 15.7 cm.
Solutions 53-2	01/03/2019	Problem 20 measurement should be 6.8 cm, not 6.9. Area calculates to 39.1 cm <sup>2</sup> , not 39.6 cm <sup>2</sup> .

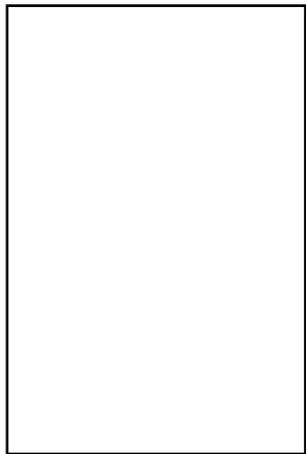
Lesson 55		01/03/2019	The game for the day should use a target number of 180.
	Solutions 62	01/22/2019	Question 5 answer should read <b>3 mm</b> , not 3 cm.
Worksheet 71-1	Solutions 71-1	04/17/2020	In Problem 2, the size of the television has been updated from 18" by 14.4" to <b>48" by 41.8"</b> to make the measurements more realistic. Calculated height changed from 10.8" to <b>23.6"</b> . Problem 3 final answer should be <b>13.92</b> , not 13.97, which both round to 14.0.
Worksheet 74-1	Solutions 74-1	04/17/2020	The definitions for Questions 1-8 had multiple errors. Wording as well as order have changed. See <b>PDFs</b> for the Worksheet as well as the Solutions.
Worksheet 75-1	Solutions 75-1	04/17/2020	The definition for trapezoid should be a <b>quadrilateral</b> with one and only one set of parallel lines, not parallelogram.
	Solutions 76-2	02/28/2019	Question 21 answer should read <b>122°</b> , not 58°.
Worksheet 76-3	Solutions 76-3	04/04/2020	Problem 24 answer "a" should be <b>9.1</b> , not 10.6 and answer "b" should be <b>10.6</b> , not 9.1. The two answers were transposed. Question 32 should read "If line segments <b>GN + NA</b> = 25 mm, what is line segments <b>TN + NI</b> ?" Answer is <b>50 mm</b> . There were a few incorrect and/or illogical variations of this question and answer in some of the printings.
Worksheet 87-1	Solutions 87-1	03/27/2019	Order of the matching terms has been changed. The circles used for Questions 11 and 12 were off and have been corrected. See attached <b>PDF</b> .
Worksheet 90-2	Solutions 90-2	06/03/2019	Question 9 uses the information from Problem <b>7</b> , not Problem 6.
	Solutions 98-2	03/25/2020	Problem 7 is missing some of the formula (in printings from April 2019 to March 2020). Second line for the area of the small circle should read: $A(sm) = \pi \times .9^2$ . Also, $r = 1.8\text{ cm}$ is missing.
	Solutions 99	04/17/2020	The perimeter for Problem 5 should be <b>41.1 m</b> , not $m^2$ .
	Solutions 102	04/04/2020	For Problem 2, the area for the 12" pizzas should be <b>113.1 in<sup>2</sup></b> , not 113 in <sup>2</sup> . The area for the 16" pizza should be <b>201.1 in<sup>2</sup></b> , not 201 in <sup>2</sup> . For Problem 7, the total cost for four 16" pizzas is <b>\$59.96</b> , not \$59.69.
Worksheet 103-1	Solutions 103-1	04/10/2019	The third definition should read "formula for the perimeter of a <b>rectangle</b> " not "formula for the perimeter of a parallelogram".
Worksheet 103-2	Solutions 103-2	06/03/2019	The prices Problems 16 have been changed to MN 20 cm = <b>\$12.95</b> , MN 25 cm = <b>\$13.55</b> , ND 20 cm <b>\$12.53</b> , and ND 25 cm <b>\$12.95</b> . See attached <b>PDFs</b> .
	Solutions 104-1	04/04/2020	The answer for Question 8 should be <b>1:2</b> , not 2:1. The answer for Question 9 should be <b>4:1</b> , not 1:4. The second sentence in the second paragraph of the notes should say "The ratio of mdT to lgT, <b>1:2</b> , is different than the ratio of lgT to mdT, <b>2:1</b> ."
Lesson 113		04/22/2020	The figures in the middle of page were labeled wrong. The left figure is reflected <b>vertically</b> in place, not horizontally. The right figure is reflected <b>horizontally</b> in place, not vertically.
Lesson 120		10/10/2018	Under the Pool table game heading, second paragraph, the second sentence should read, "In the second and third figures, the ball is reflected at <b>30°, then at 60°</b> ."
	Solutions 121-2	06/03/2019	The answer for Question 20 Elipse is $\infty$ for maximum number of lines of symmetry, not 2.
Worksheet 126-3	Solutions 126-3	06/05/2020	Question 42 has been changed from "If area $\triangle MES = 97\text{ km}^2$ , what is the area of $\triangle SNI$ ?" to "...what is the area of <b><math>\triangle NDA</math></b> ?" Answer is changed from $194\text{ km}^2$ to <b><math>291\text{ km}^2</math></b> .
	Solutions 126-6	06/03/2019	The answer for Question 67 should be <b>19 mm</b> , not 21 mm.
	Solutions 126-8	01/22/2019	The graphic for Question 78 has an error in the top right drawing. It should be as shown here. 
	Solutions 126-9	03/22/2020	Question 81 should read "What is the angle of <b>rotation</b> between..." rather tha "What is the angle of reflection between..."
	Solutions 127-2	06/03/2019	Question 23, identification of a rhombus, should be <b>ABJF and CDEJ</b> . The polygons <b>FKLE</b> and <b>KBCL</b> are not rhombuses because the four sides are not equal.

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1. All these rectangles have the same area of  $24 \text{ cm}^2$ . Use a ruler to find the measurements of the sides.

2. Use a perimeter formula and your calculator to calculate the perimeters in cm. Show your work. Use each of the three formulas at least once.



3. Finding all the possible measurements of the rectangles should have reminded you of finding factors. List all the factors of 24.

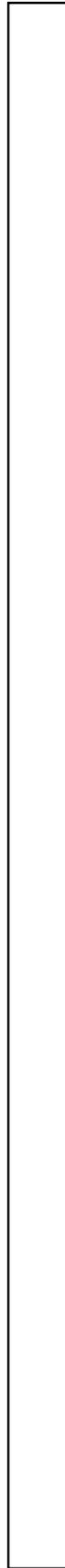
\_\_\_\_\_

4. What pattern do you see in the perimeters as the rectangles become closer to a square?

\_\_\_\_\_

5. What is a formula for the perimeter of a square ( $l = w$ )?

\_\_\_\_\_



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1–4. Match the following terms with the correct definitions.

- |               |   |
|---------------|---|
| Crosshatch    | the number of parts in a fraction                         |
| Numerator     | shading used by engineers and designers to represent area |
| Denominator   | the number in a fraction naming the size of the part      |
| Unit fraction | fractions with a numerator of 1                           |

5. Create a ruler below dividing it into sixteenths. Using your drawing tools, bisect the horizontal line below. At that point draw a vertical line the height of line  $m$ . Then bisect the two halves; draw lines the height of line  $a$ . Continue by bisecting the four fourths; draw lines the height of line  $t$ . Finally, bisect the eight eighths and draw those lines the height of line  $h$ .



Write the fraction for each line. Use your drawing tools to determine the length.

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

11–12. Using your drawing tools, draw a horizontal line the length indicated by the fraction. Use the ruler above as your guide.

$$\frac{5}{8} \times$$

$$\frac{5}{16} \times$$

Name: \_\_\_\_\_

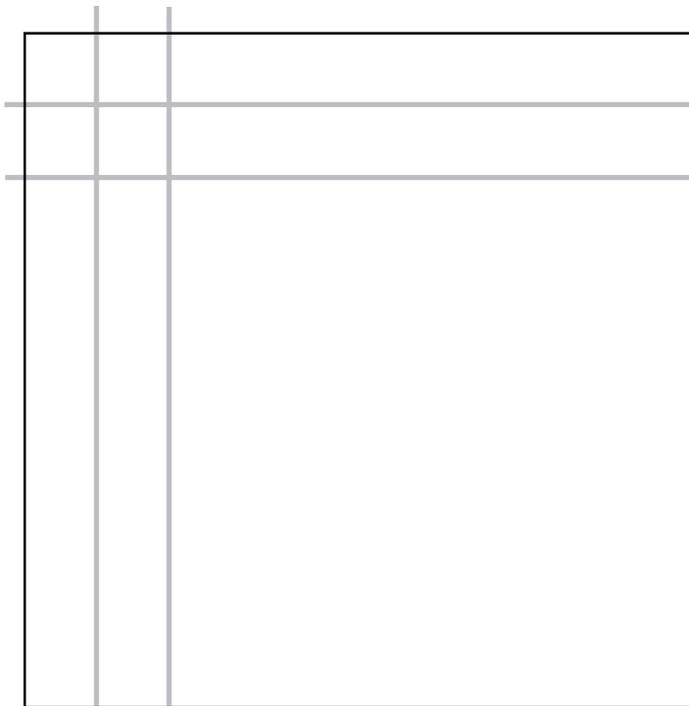
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1. Before starting, guess which rectangle has the greater area. \_\_\_\_\_

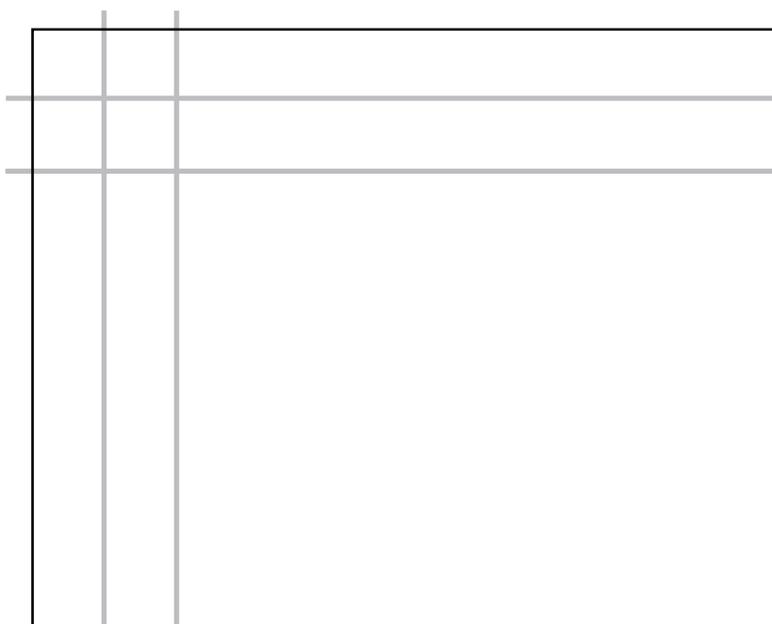
2. Fill the two rectangles below by drawing square centimeters.



A.



B.



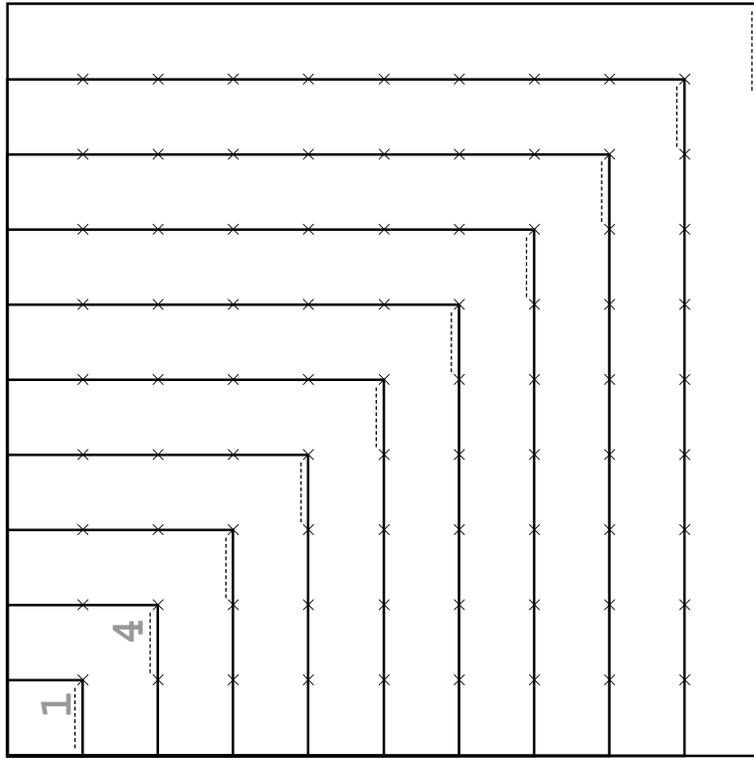
3. Which of the two rectangles, A or B, has the greater area? Explain your reasoning below.

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8. Below is a shortened version of the multiplication table. Find the area of each square and write the number on the dotted line.



9. What is special about the numbers? \_\_\_\_\_

10. Does the results from the previous worksheet apply? \_\_\_\_\_

11. Find the difference between each two consecutive numbers that you wrote in the multiplication table above.

**3, 5,** \_\_\_\_\_

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12. Below is another version of the multiplication table. Fill in the shaded squares and circles.

1	2	3	4	5	6	7	8	9	10
	Shaded		Circle						
		Shaded		Circle					
			Shaded		Circle				
				Shaded		Circle			
					Shaded		Circle		
						Shaded		Circle	
							Shaded		Circle
								Shaded	
									Shaded

13. See the two numbers in circles next to a square. How are they related to the number in the square?

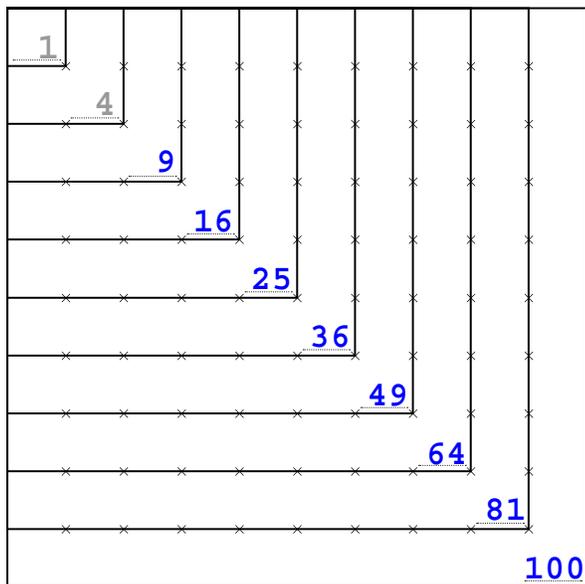
\_\_\_\_\_

14. On what worksheet did you work with that relationship?

\_\_\_\_\_

15. What is the formula? \_\_\_\_\_

8. Below is a shortened version of the multiplication table. Find the area of each square and write the number on the dotted line.



9. What is special about the numbers? They are squares.

10. Does the results from the previous worksheet apply? yes

11. Find the difference between each two consecutive numbers that you wrote in the multiplication table above.

3, 5, 7, 9, 11, 13, 15, 17, 19

12. Below is another version of the multiplication table. Fill in the shaded squares and circles.

1	2	3	4	5	6	7	8	9	10
2	4		8						
3		9		15					
4	8		16		24				
5		15		25		35			
6			24		36		48		
7				35		49		63	
8					48		64		80
9						63		81	
10							80		100

13. See the two numbers in circles next to a square. How are they related to the number in the square?

Equal & one less than the square.

14. On what worksheet did you work with that relationship?

32

15. What is the formula?  $(n+1) \times (n-1) = n^2 - 1$

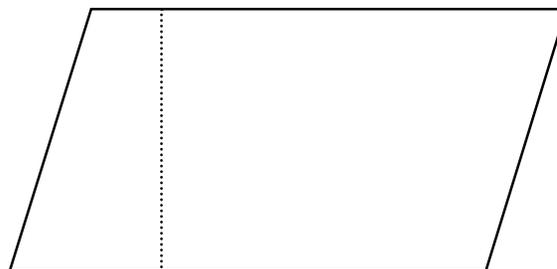
**NOTES:** Math is all about patterns. Being aware and able to find patterns will greatly help the student in their math education.

**DICTIONARY TERMS:** consecutive

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Use these two quadrilaterals for the next four problems. Pay attention to the precision requested with the measurements.



1. Calculate the area of both quadrilaterals. **Measure to the nearest whole number** using inches.
  
  
  
  
  
  
  
  
  
  
2. Calculate the area of both quadrilaterals. **Measure to the tenths** using inches. Round the answers to the tenths.
  
  
  
  
  
  
  
  
  
  
3. Calculate the area of both quadrilaterals. **Measure to the hundredths** using inches. Round the answers to the hundredths.
  
  
  
  
  
  
  
  
  
  
4. Calculate the area of both quadrilaterals. The rectangle measures 3.139 inches wide and 1.817 inches tall. The parallelogram measures 2.493 inches wide and 1.383 inches tall. Round the answers to the thousandths.

**CONTINUE READING THE LESSON.**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1-7. Match the following terms with the correct definitions.

Formula	a general principle stated in mathematical symbols
Square inch	the number of units it takes to cover a surface
Altitude	a square measuring one inch by one inch used to measure area
Area	the line measured to give the height of a figure
Square millimeter	a square measuring one centimeter by one centimeter used to measure area
Square centimeter	a square measuring one millimeter by one millimeter used to measure area

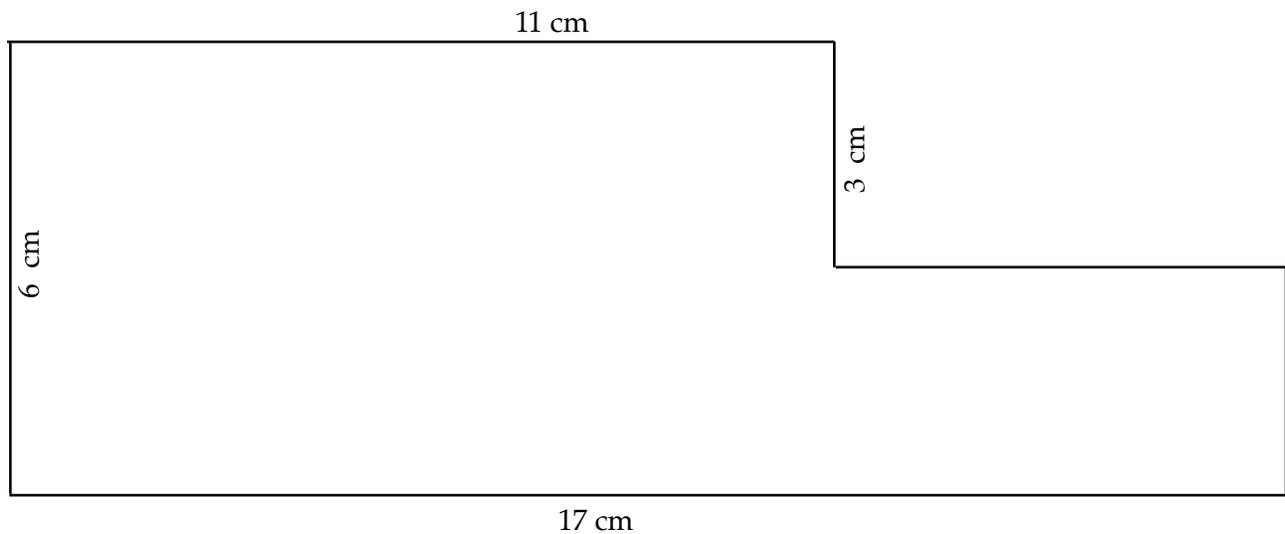
8. What is the symbol for square centimeters? \_\_\_\_\_

9. What is the symbol for square inches? \_\_\_\_\_

10. What is the formula for calculating area of a rectangle? \_\_\_\_\_

11. What is the formula for calculating perimeter of a rectangle? \_\_\_\_\_

12. What is the area for the shape below? Show your work below.



1-7. Match the following terms with the correct definitions

- Formula \_\_\_\_\_ a general principle stated in mathematical symbols
- Square inch \_\_\_\_\_ the number of units it takes to cover a surface
- Altitude \_\_\_\_\_ a square measuring one inch by one inch used to measure area
- Area \_\_\_\_\_ the line measured to give the height of a figure
- Square millimeter \_\_\_\_\_ a square measuring one centimeter by one centimeter used to measure area
- Square centimeter \_\_\_\_\_ a square measuring one millimeter by one millimeter used to measure area

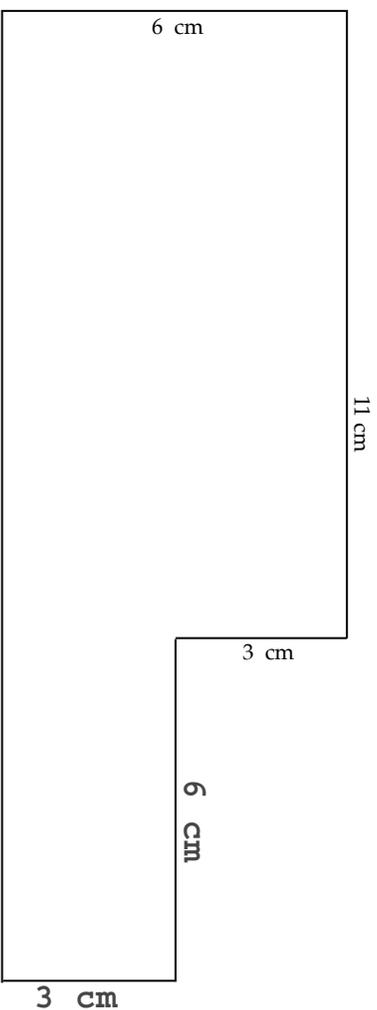
8. What is the symbol for square centimeters? cm<sup>2</sup>

9. What is the symbol for square inches? in<sup>2</sup>

10. What is the formula for calculating area of a rectangle?  $A = w \times h$  OR  $A = wh$

11. What is the formula for calculating perimeter of a rectangle?  $P = 2(w + h)$  OR  $P = 2w + 2h$  OR  $P = w + h + w + h$

12. What is the area for the shape below? Show your work below.



$$A = 84 \text{ cm}^2$$

[CALCULATION METHODS WILL VARY.]

**NOTES:** Problem 12 can be solved a number of different ways. If the shape is divided vertically into two rectangles, one 11 cm by 6 cm and the other 6 cm by 3 cm, the calculation will look like this:

$$A = wh \text{ (left rectangle)} + wh \text{ (right rectangle)}$$

$$A = 11 \times 6 + 6 \times 3$$

$$A = 66 + 18$$

$$A = 84 \text{ cm}^2$$

If the shape is divided horizontally into two rectangles, one 11 cm by 3 cm the other 17 cm by 3 cm, the calculation will look like this:

$$A = wh \text{ (upper rectangle)} + wh \text{ (lower rectangle)}$$

$$A = 11 \times 3 + 17 \times 3$$

$$A = 33 + 51$$

$$A = 84 \text{ cm}^2$$

Or, if the shape is made into a whole rectangle, then subtract the added rectangle, the calculation will look like this:

$$A = wh \text{ (whole rectangle)} - wh \text{ (added rectangle)}$$

$$A = 17 \times 6 - 6 \times 3$$

$$A = 102 - 18$$

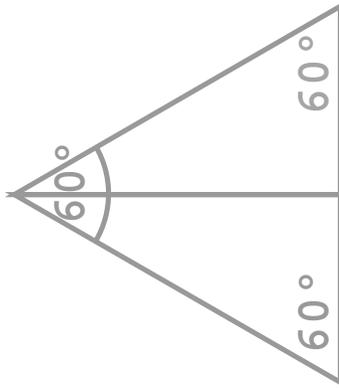
$$A = 84 \text{ cm}^2$$

Name: \_\_\_\_\_

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Use the two paper 30-60 triangles and arrange them to make the following figures. Then draw them with your drawing tools below. Make the shortest side of the 30-60 triangles 2.5 cm or 1 inch. For each figure, measure and write the angle of the vertices.

- 1. Equilateral triangle.
- 2. Isosceles triangle that is not equilateral.
- 3. Rectangle.



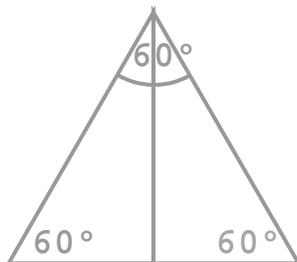
- 4-5. Two parallelograms that are neither rectangles nor mirror images of each other.
- 6. Quadrilateral that is not a parallelogram.

- 7. Which figure has the greatest area? \_\_\_\_\_
- 8. Which figures have the least perimeter? \_\_\_\_\_
- 9. Which figures have the greatest perimeter? \_\_\_\_\_

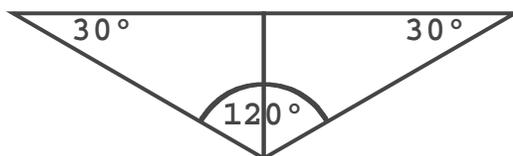
Solutions: Worksheet 50-2,  
Measuring Angles

Use the two paper 30-60 triangles and arrange them to make the following figures. Then draw them with your drawing tools below. Make the shortest side of the 30-60 triangles 2.5 cm or 1 inch. For each figure, measure and write the angle of the vertices.

1. Equilateral triangle.



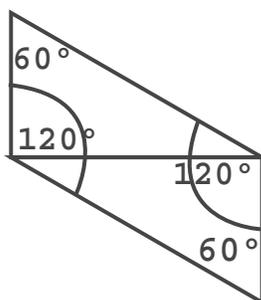
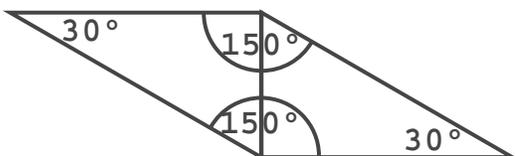
2. Isosceles triangle that is not equilateral.



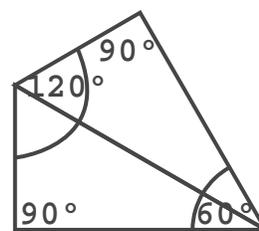
3. Rectangle.



4-5. Two parallelograms that are neither rectangles nor mirror images of each other.



6. Quadrilateral that is not a parallelogram.



[ORIENTATIONS WILL VARY.]

7. Which figure has the greatest area? all the same

8. Which figures have the least perimeter? rectangle, quadrilateral

9. Which figures have the greatest perimeter? isosceles triangle, parallelogram with shortest sides of the triangle touching

**NOTES:** Some students may struggle creating the figures with their paper triangles. Help them realize that they can flip their triangles over as well as rotate the triangles. Once the figure is discovered with the paper triangles, drawing it is made easier.

Check that the shortest side of each 30-60 triangle drawn is 2.5 cm or 1 inch. One student, Draeke, chose to write "2.5 cm" on his paper triangles to help with the construction of the figures on the worksheet.

**DICTIONARY TERMS:** goniometer

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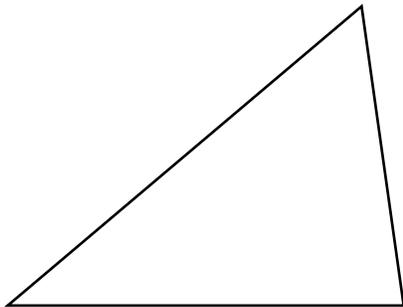
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1–8. Match the following words with the correct definitions.

- |                       |  |
|-----------------------|--|
| Straightedge          | shape with four sides  |
| Octagon               | quadrilateral with one and only one set of parallel lines  |
| Trapezoid             | eight sided polygon  |
| Quadrilateral         | tool for drawing a straight line   |
| Hexagon               | polygon with six sides   |
| Distributive Property | quadrilateral with two sets of parallel lines  |
| Parallelogram         | two equal sides  |
| Isosceles             | when multiplying or dividing some numbers all by the same number, you can add the numbers first and multiply the total |

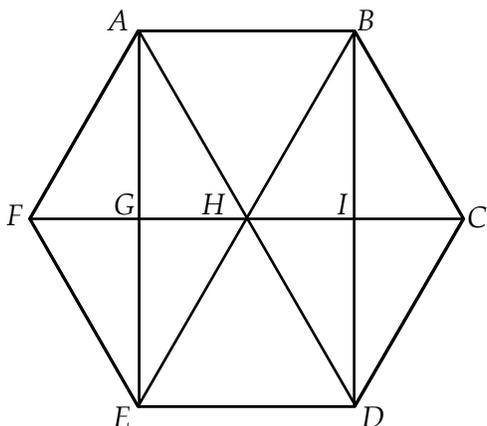
9. How many centimeters are in 1 inch? \_\_\_\_\_

10. Find the perimeter of the triangle below to the nearest tenth of an inch.



11. Calculate the perimeter of the same triangle in centimeters using the calculator.  $P =$  \_\_\_\_\_

Use letters to identify the following shapes.



12. Two rhombuses: \_\_\_\_\_

13. Three rectangles: \_\_\_\_\_

14. Four trapezoids: \_\_\_\_\_

15. Six equilateral triangles: \_\_\_\_\_

\_\_\_\_\_

16. Four isosceles triangles: \_\_\_\_\_

17. Twelve right triangles: \_\_\_\_\_

\_\_\_\_\_

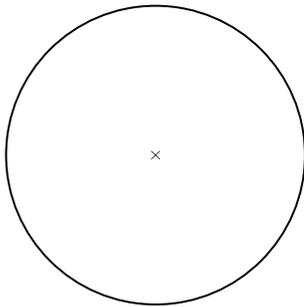
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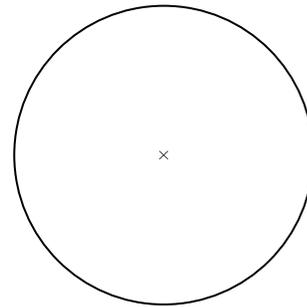
1–10. Match the following terms with the correct definitions

- |                            |  |
|----------------------------|--|
| Circumference              | when one circle is inside the other and they are tangent at the same point       |
| Inscribed polygon          | the distance around a circle   |
| Tangent                    | when all of the vertices of a polygon lie on a circle                            |
| Internally tangent circles | the exact point where a line segment touches a circle                            |
| Line                       | a line measuring across the middle of a circle                                   |
| Diameter                   | the ratio of the circumference to the diameter of a circle                       |
| Pi                         | a polygon drawn around a circle so that each of its sides is tangent to a circle |
| Circumscribed polygon      | a path made by points that extends forever                                       |
| Radius                     | an exact place, with no width, depth or height                                   |
| Point                      | a line segment with one end at the center and the other on the circle            |

11. Using your drawing tools, draw an 8 sided inscribed regular polygon.



12. Using your drawing tools, draw an 8 sided circumscribed regular polygon.



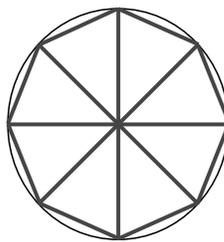
13–14. For each polygon, measure the length of a side in millimeters. Find the perimeter. Calculate the ratio of  $P$ , the perimeter of the polygon, to  $D$ , the diameter of the circle. Complete the chart below.

Number of Sides	Length, Side of Polygon in mm	$P$ (perimeter) of Polygon in mm	$D$ (diameter) of Circle in mm	Ratio of $P$ to $D$ (hundredths)
8 Inscribed				
8 Circumscribed				

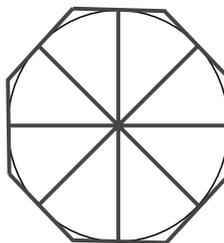
**NOTES:** On Problems 13 and 14, if needed remind the student that the ratio of  $P$ , perimeter, to  $D$ , diameter, is found by dividing the perimeter by the diameter,  $120 \div 40$  and  $128 \div 40$ . If the student's measurements vary, check that their ratio is accurate.  
If the student uses tickmarks, rather than line segments as shown in Problems 11 and 12, that is acceptable.

- 1–10. Match the following terms with the correct definitions
- Circumference — when one circle is inside the other and they are tangent at the same point
  - Inscribed polygon — the distance around a circle
  - Tangent — when all of the vertices of a polygon lie on a circle
  - Internally tangent circles — the exact point where a line segment touches a circle
  - Line — a line measuring across the middle of a circle
  - Diameter — the ratio of the circumference to the diameter of a circle
  - Pi — a polygon drawn around a circle so that each of its sides is tangent to a circle
  - Circumscribed polygon — a path made by points that extends forever
  - Radius — an exact place, with no width, depth or height
  - Point — a line segment with one end at the center and the other on the circle

11. Using your drawing tools, draw an 8 sided inscribed regular polygon.



12. Using your drawing tools, draw an 8 sided circumscribed regular polygon.



13–14. For each polygon, measure the length of a side in millimeters. Find the perimeter. Calculate the ratio of  $P$ , the perimeter of the polygon, to  $D$ , the diameter of the circle. Complete the chart below.

Number of Sides	Length, Side of Polygon in mm	$P$ (perimeter) of Polygon in mm	$D$ (diameter) of Circle in mm	Ratio of $P$ to $D$ (hundredths)
8 Inscribed	15 mm	120 mm	40 mm	3.00
8 Circumscribed	16 mm	128 mm	40 mm	3.20

**NOTES:** Make sure the student is understanding the difference between the measurements  $a$ ,  $b$ , and  $c$  and the square of the numbers,  $a^2$ ,  $b^2$ , and  $c^2$ .

1–8. Match the following terms with the correct definitions

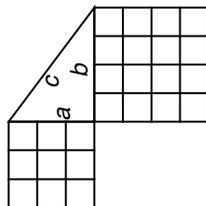
- Oblique ~~the side opposite the right angle of a triangle~~
- Legs ~~a line that is not parallel or perpendicular~~
- Perfect square ~~the two sides of a triangle opposite the hypotenuse~~
- Hypotenuse ~~when the square root of a number is a whole number~~
- Pythagorean theorem ~~a set of logical reasons for learning if a statement is true~~
- Proof ~~a number multiplied by itself gives the quantity~~
- Square root ~~the special relationship between the squares of the sides of a right triangle~~

9. In the triangle on the right, how many squares are on side  $a$ ? 9

How many on side  $b$ ? 16

How many on both sides? 25

How many squares will there be on the hypotenuse? 25



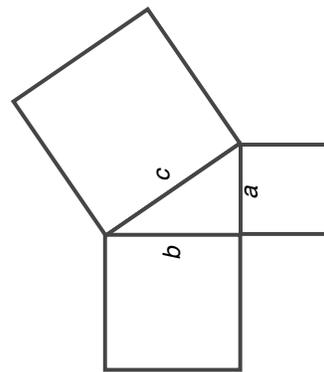
10. Draw the squares onto the sides of the triangle on the right using your drawing tools. Measure to the tenths of a cm, then give the answers to the hundredths.

$a =$  1.6 cm      $a^2 =$  2.56 cm<sup>2</sup>

$b =$  2.4 cm      $b^2 =$  5.76 cm<sup>2</sup>

$c =$  2.884 cm      $c^2 =$  8.32 cm<sup>2</sup>

11. Does  $c^2 = a^2 + b^2$ ? yes



Name: \_\_\_\_\_

Date: \_\_\_\_\_

1–8. Match the following terms with the correct definitions

- |                     |   |
|---------------------|---|
| Oblique             | the side opposite the right angle of a triangle                               |
| Legs                | a line that is not parallel or perpendicular                                  |
| Perfect square      | the two sides of a triangle opposite the hypotenuse                           |
| Hypotenuse          | when the square root of a number is a whole number                            |
| Pythagorean theorem | a set of logical reasons for learning if a statement is true                  |
| Proof               | a number multiplied by itself gives the quantity                              |
| Square root         | the special relationship between the squares of the sides of a right triangle |

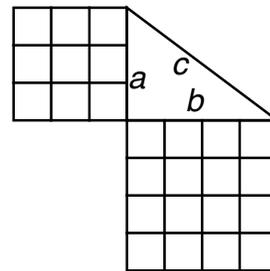
9. In the triangle on the right, how many squares

are on side  $a$ ? \_\_\_\_\_

How many on side  $b$ ? \_\_\_\_\_

How many on both sides? \_\_\_\_\_

How many squares will there be on the hypotenuse? \_\_\_\_\_

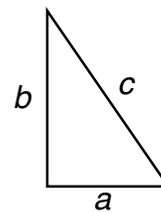


10. Draw the squares onto the sides of the triangle on the right using your drawing tools. Measure to the tenths of a cm, then give the answers to the hundredths.

$a =$  \_\_\_\_\_       $a^2 =$  \_\_\_\_\_

$b =$  \_\_\_\_\_       $b^2 =$  \_\_\_\_\_

$c =$  **2.884 cm**       $c^2 =$  \_\_\_\_\_

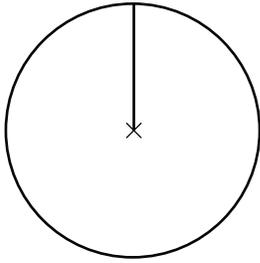


11. Does  $c^2 = a^2 + b^2$ ? \_\_\_\_\_

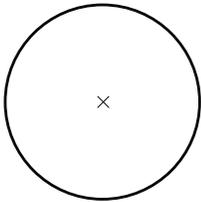
Name: \_\_\_\_\_

Date: \_\_\_\_\_

12. Draw a special square using the radius of this circle as one side. Find the perimeter and area of the square and then find the circumference and area of the circle.

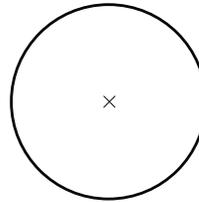


13. Find the radius of a circle that has twice the circumference of the circle below. Draw the circle.



×

14. Find the radius of a circle that has twice the area of the circle below. Draw the circle.



×

15. The Vikings had a favorite snack called lefsa. It is a soft tortilla made with potatoes, flour, butter, and cream. Find the area to the nearest tenth of a square cm for each size of lefsa in Minnesota and North Dakota. Fill in the chart.

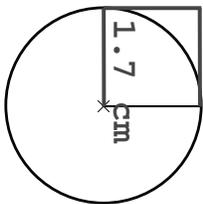


16. Find the price per square centimeter in tenths of a cent for each piece of lefsa.

Lefsa in Minnesota		
Size	20 cm	25 cm
Price	\$12.95	\$13.55
Area		
Price/cm <sup>2</sup>		

Lefsa in North Dakota		
Size	20 cm	25 cm
Price	\$12.53	\$12.95
Area		
Price/cm <sup>2</sup>		

12. Draw a special square using the radius of this circle as one side. Find the perimeter and area of the square and then find the circumference and area of the circle.



$$P = 1.7 \times 4$$

$$P = 6.8 \text{ cm}$$

$$C = 2\pi r$$

$$C = 2\pi \times 1.7$$

$$C = 10.7 \text{ cm}$$

$$A(\text{sq}) = r^2$$

$$A(\text{sq}) = 1.7^2$$

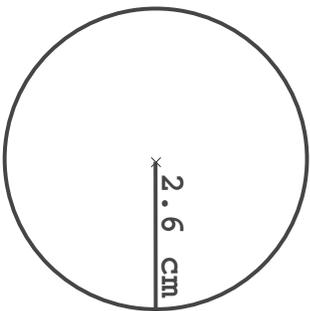
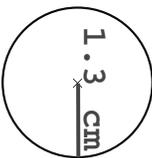
$$A(\text{sq}) = 2.9 \text{ cm}^2$$

$$A(\text{cir}) = \pi r^2$$

$$A(\text{cir}) = \pi \times 1.7^2$$

$$A(\text{cir}) = 9.1 \text{ cm}^2$$

13. Find the radius of a circle that has twice the circumference of the circle below. Draw the circle.



$$C(\text{sm}) = 2\pi r$$

$$C(\text{sm}) = 2\pi \times 1.3$$

$$C(\text{sm}) = 8.2 \text{ cm}$$

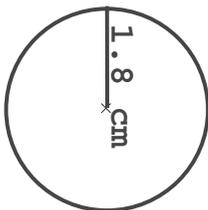
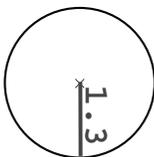
$$C(\text{lg}) = 8.2 \times 2$$

$$C(\text{lg}) = 16.4 \text{ cm}$$

$$16.4 = 2\pi r$$

$$r(\text{lg}) = \frac{16.4}{2\pi} = 2.6 \text{ cm}$$

14. Find the radius of a circle that has twice the area of the circle below. Draw the circle.



$$A(\text{sm}) = \pi r^2$$

$$A(\text{sm}) = \pi \times 1.3^2$$

$$A(\text{sm}) = 5.3 \text{ cm}^2$$

$$A(\text{lg}) = 5.3 \times 2$$

$$A(\text{lg}) = 10.6$$

$$10.6 = \pi r^2$$

$$\frac{10.6}{\pi} = r^2 = 3.37$$

$$r(\text{lg}) = 1.8 \text{ cm}$$

15. The Vikings had a favorite snack called lefsa. It is a soft tortilla made with potatoes, flour, butter, and cream. Find the area to the nearest tenth of a square cm for each size of lefsa in Minnesota and North Dakota. Fill in the chart.



16. Find the price per square centimeter in tenths of a cent for each piece of lefsa.

Lefsa in Minnesota		
Size	20 cm	25 cm
Price	\$12.95	\$13.55
Area	314.2	490.9
Price/cm <sup>2</sup>	4.1¢	2.8¢

Lefsa in North Dakota		
Size	20 cm	25 cm
Price	\$12.53	\$12.95
Area	314.2	490.9
Price/cm <sup>2</sup>	4.0¢	2.6¢

**NOTES:** On Question 16, the sizes given, 20 cm and 25 cm, is the diameter. Although it does not specifically say it is the diameter of the snack, using a radius measurement is not practical nor likely.