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UNIT 5 LESSON 15

**AIM**: SWBAT determine areas of scaled figures

**THINK ABOUT IT!**

The table below shows an original figure and its area, a scale factor, and the scaled figure. Determine the area of the scaled figures. What relationship do you see that exists between the scaled areas and the original areas?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Original Figure | Original Area | Scale Factor | Scaled Figure | Scaled Area |
|  | $$a=l×w$$$$a=4 ×2$$$$a=8in^{2}$$ | 2 |  |  |
|  | $$a=\frac{1}{2}b×h$$$$a=\frac{1}{2}(2)(3)$$$$a=\frac{1}{2}(6)$$$$a=3m^{2}$$ | 3 |  |  |
|  | $$a=b×h$$$$a=10 ×6$$$$a=60cm^{2}$$ | c | 10c6c |  |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Test the Conjecture 1) A rectangle has an area of 54 square units. A scale factor of $\frac{1}{3}$ is applied to the rectangle to create a scaled figure. What is the area of the scaled figure?

 9 units

**54 Square Units**

6 units

**Area = ?**

Test the Conjecture 2) Figure A has an area of 6 square units. Figure B was created by scaling Figure A and it has an area of 96 square units. What was the scale factor that was applied to Figure A to create Figure B?

**96 units2**

**6 units2**

 4 units

 3 units

Conjecture

|  |
| --- |
|  |

**PARTNER PRACTICE**

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| --- |
| *Bachelor Level* |

1. The area of a rectangle is 20 square feet. If a scale factor of 3 is applied to the rectangle to form a new rectangle, what will be its area?
2. 60 square feet
3. 120 square feet
4. 180 square feet
5. 40 square feet
6. A square has an area of 10 square millimeters. If a scale factor of 3 is applied to the square, what is the area of the new square that is formed?
7. Solve the problem below



|  |
| --- |
| *Master Level* |

1. On the blueprint for Joey’s new house, his floor measures 9 square feet. The actual house will have an area of 1,296 square feet. What scale factor must be applied to create the house from the blueprint?

**INDEPENDENT PRACTICE**

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| --- |
| *Bachelor Level* |

1. Which equation could be used to determine the area of new figure when a scale factor of 4 is applied?
	1. y = 4x
	2. y = ¼ x
	3. y = 16x
	4. y = $\frac{1}{16}x $
2. A rectangle has an area of 28 square inches. After a scale factor of $\frac{1}{2}$ is applied, what is the area of the new shape?
3. Solve the problem below:



|  |
| --- |
| *Master Level* |

1. A toy racecar has a roof with an area of 20 square mm. The real car has a roof with an area of 2,420 square mm. What scale factor was applied to the model to create the car?
2. A square has a side of $y$ inches. By applying a scale factor of 5, a new square is formed. Write an expression to represent the area of the new square.

1. The third floor of the White House in Washington, D.C. has an area of 507 square feet. A model of the White House has an area of 432 square inches. What scale factor was applied to the actual White House to create the model?

|  |
| --- |
| *PhD Level* |

1. A drawing of a room shows the floor is 2” by 3”. For the actual room, a scale factor of 100 is applied. Family is tiling the room with 8” by 4” tiles. How many tiles should they buy?

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**EXIT TICKET**

|  |  |  |  |
| --- | --- | --- | --- |
| Self-assessment | I mastered the learning objective today. | I am almost there.  | Need more practice and feedback. |
| Teacher feedback | You mastered the learning objective today. | You are almost there.  | You need more practice and feedback. |

1. A parallelogram has an area of 48 square millimeters. Jorge applied a scale factor of $\frac{1}{4}$ to produce a new parallelogram. What is the area of the new parallelogram?
2. The area of triangle A is 20 square inches. The area of triangle B is 5 square inches. What scale factor was applied to triangle A to create triangle B?