

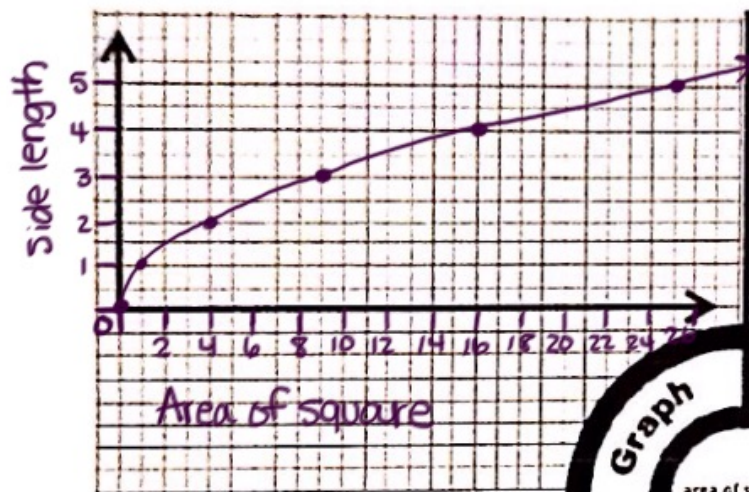
## Math 2

- Toolkits
- take out worksheet from yesterday

★ Hand in inverse variation HW

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area of square	side length
1	1
√2	1.41
√3	1.73
4	2
5	2.24
6	2.45
7	2.6
8	2.8
9	3
10	3.16
11	3.32
12	3.46
13	3.61

area of square	side length
14	3.74
15	3.87
16	4
17	4.12
18	4.24
19	4.36
20	4.47
21	4.58
22	4.69
23	4.80
24	4.90
25	5



Key Features of the function

- Intercepts:  
 $x\text{-int: } (0,0)$     $y\text{-int: } (0,0)$
- Rate of change:  
 increasing at a decreasing rate
- Domain:  $x\text{-value}$   
 $x \geq 0$
- Range:  $y\text{-value}$   
 $y \geq 0$

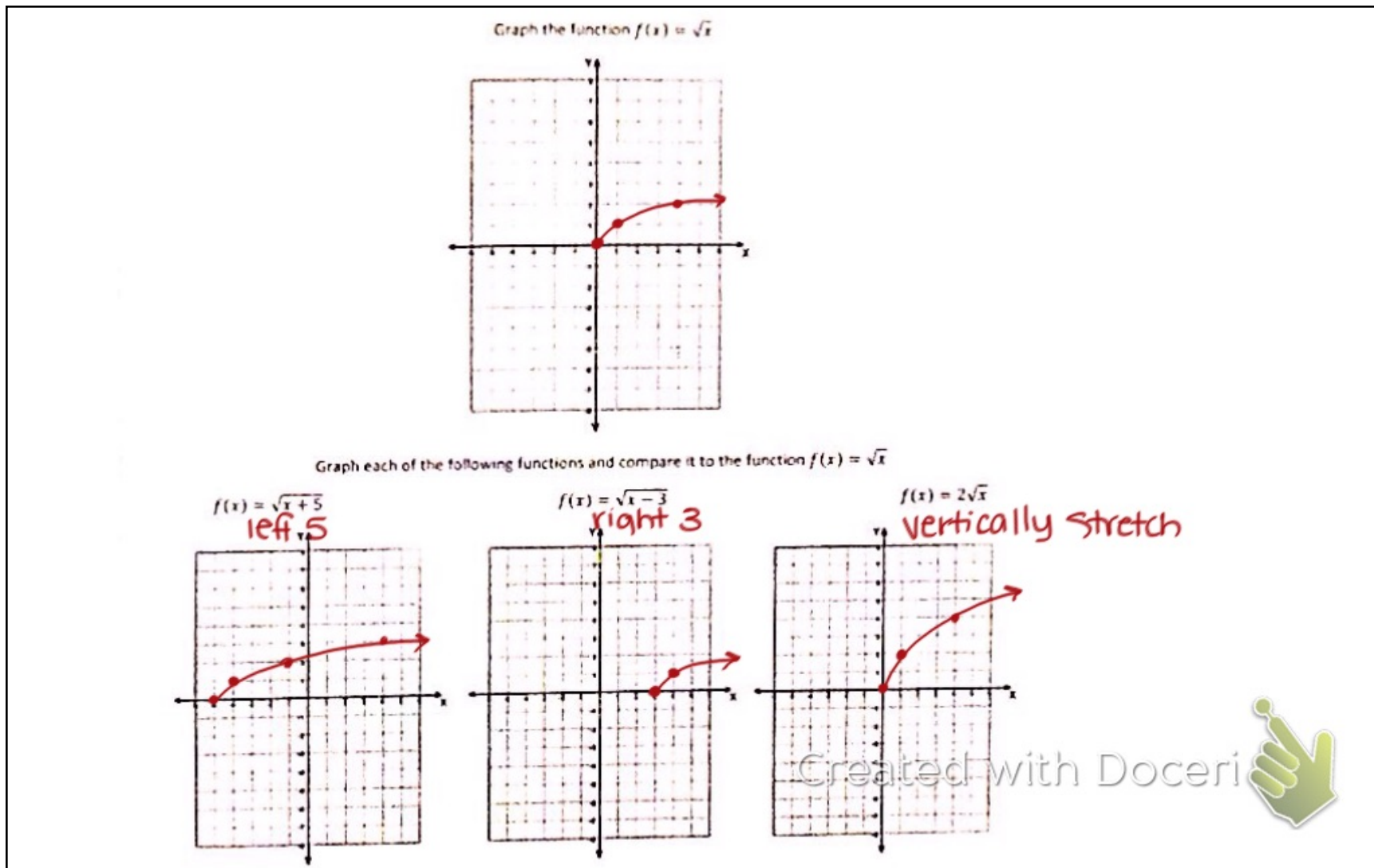
$$A = l \cdot w$$

$$\sqrt{A} = \sqrt{s^2}$$

$$s = \sqrt{A}$$

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A change in size but not shape of a figure.

$$\text{Scale Factor} = \frac{\text{NEW}}{\text{ORIGINAL}}$$

A scale factor less than one is a reduction.

A scale factor greater than one is an enlargement.

A scale factor equal to one means that: stays the same

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1. Graph  $\triangle STU$  with vertices:  
 $S(-1, 2)$ ,  $T(4, 0)$ ,  $U(-2, -4)$

2. Dilate the figure using a scale factor of  $\frac{1}{2}$

3. Graph the new figure  $\triangle S'T'U'$ .

4. List the new coordinates:

$$S'(-0.5, 1)$$

$$T'(2, 0)$$

$$U'(-1, -2)$$

5. Is this a reduction or enlargement?  
reduction

6. How do you know?  
scale factor is less than 1

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		<p><math>J(-1, -1), K(-2, 1), L(1, 0)</math></p> <ol style="list-style-type: none"> <li>Dilate the figure using a scale factor of <math>\frac{1}{2}</math>.</li> <li>Graph the new figure <math>\Delta J'K'L'</math>.</li> <li>List the new coordinates:              <math>J'(-2, -2)</math>  <math>K'(-4, 2)</math>  <math>L'(2, 0)</math> </li> <li>Is this a reduction or enlargement?              enlargement           </li> <li>How do you know?              Scale factor bigger than 1           </li> </ol>
	<ol style="list-style-type: none"> <li>Find the scale factor of the figures.              <math>\frac{1}{2}</math> </li> <li>Is this a reduction or enlargement?              reduction           </li> <li>How do you know?              Scale factor is less than 1           </li> </ol>	<p>Created with Doceri </p>

### Dimensional Changes Worksheet

Use the figures below to answer questions #1 - 9.

1. Find the scale factor of the sides. (EFGH / ABCD)

$$\frac{\text{New}}{\text{old}} = \frac{15}{10} = \boxed{1.5}$$

2. Find the perimeter of ABCD

28

3. Find the perimeter of EFGH

42

4. Find the scale factor of the perimeters (EFGH / ABCD)

$$\frac{42}{28} = \boxed{1.5}$$

5. How does the scale factor of the sides compare to the scale factor of the perimeter?

Same

6. Find the area of ABCD

40

7. Find the area of EFGH

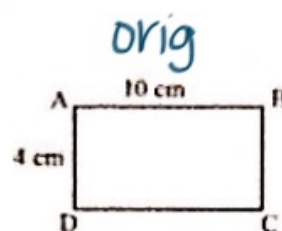
90

8. Find the scale factor of the areas (EFGH/ABCD)

2.25

9. How does the scale factor of the sides compare to the scale factor of the area?

$$(\text{SF})^2 = \text{Area's scale factor.}$$



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Answer the following problems. Use a separate sheet of paper if you need more room:

10. A rectangle has a perimeter of 28. It is dilated by a scale factor of 3.

(a) What is the new perimeter?  $28(3) = 84$

(b) What is the new area? (Hint: What would the ratio of the areas be?)

11. A pentagon has a perimeter of 20 ft. If every side is halved, find the new perimeter.

$$SF = \frac{1}{2} \quad 20 \times \frac{1}{2} = \boxed{10}$$

12. The perimeter of a triangle is 12 in. After a dilation the perimeter is 16 in. What is the scale factor of the dilation?

$$\frac{\text{New}}{\text{Old}} = \frac{16}{12} = 1.\bar{3} \rightarrow \frac{4}{3}$$

13. The area of a rectangle is 100 cm<sup>2</sup>. After a dilation, the area is 25 cm<sup>2</sup>. What is the scale factor of the dilation?

$$\frac{25}{100} = \sqrt{\frac{1}{4}} \rightarrow \text{Area} \quad SF = \frac{1}{2}$$

14. Describe the effect on the area of a circle when the radius is tripled.

$$SF \text{ Area} = \times 9$$

$$SF = \times 3$$

15. Tony and Edwin each built a rectangular garden. Tony's garden is twice as long and twice as wide as Edwin's garden. If the area of Edwin's garden is 600 square feet, what is the area of Tony's garden?

$$SF: \times 2 \quad SF \text{ Area}: \times 4 \quad \boxed{\text{Tony's: } 2400 \text{ ft}^2}$$

16. The ratio of two similar polygons is 3:5. The perimeter of the larger polygon is 150 centimeters. What is the perimeter of the smaller polygon?

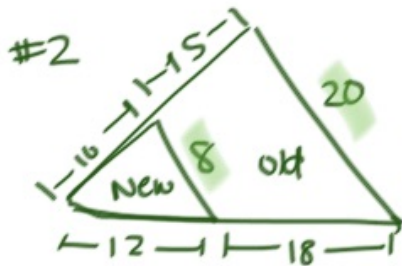
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#1.  $A = 32$

$SF = \left(\frac{1}{2}\right)^2$

$SF \text{ of } A = \frac{1}{4}$

$32 \left(\frac{1}{4}\right) = 8$



$\frac{8}{20} = \left(\frac{2}{5}\right)^2 = \frac{4}{25}$

#3. Area  $\times 4$   $(SF)^2 = \frac{\text{Area}}{SF}$

$P_S = 16 \times 2 \quad P_B = 32$

$SF = 2$

#4.  $SF = \frac{1}{4}$

$SF \text{ Area} = \frac{1}{16}$

#5.

$SF : (x5)^2$   
 $\text{Area } SF = x25$

$\text{small rect} = 2 \times 25 \quad \text{Big rect} = 50$

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