• Graphing Inequalities

• To graph an inequality on a number line:

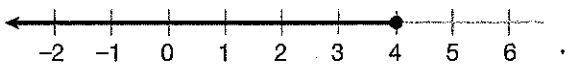
1. Use a dot or an empty circle to represent the given number.
   Draw a dot if the number is included in the graph.
   Draw an empty circle if the number is not included in the graph.
2. Draw a shaded line to represent other numbers included in the graph.
3. Draw an arrowhead to show that there are more numbers included that cannot be seen on the given number line.

Example: Graph $x \leq 4$ on a number line.

The comparison $x \leq 4$ means "x is *less than or equal to 4*."

On a number line:

1. Start at the answer "*equal to 4*." Draw a dot at 4 to show that 4 is included.
2. Draw a line on all the numbers *less than 4*.
3. Draw an arrowhead to show that there are more numbers less than 4.

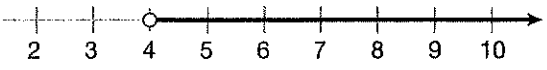


Example: Graph $x > 4$ on a number line.

The comparison $x > 4$ means "x is *greater than (but does not include) 4*."

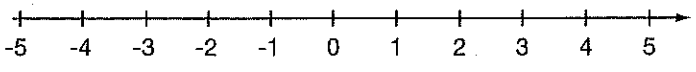
On a number line:

1. Start at the given number 4. Draw an empty circle at 4 to show that 4 is not included (x is not equal to 4).
2. Draw a line on all the numbers *greater than 4*.
3. Draw an arrow to show that there are more numbers greater than 4.

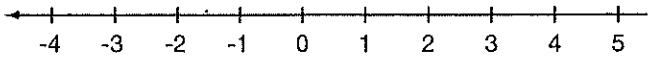


Practice:

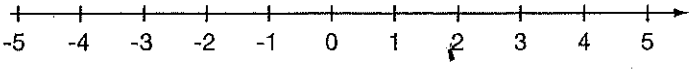
1. Graph $x > 4$.



2. Graph $y \leq 3$.



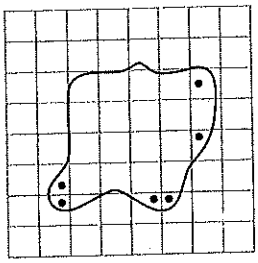
3. Graph $x \geq -2$.



• Estimating Areas

- Area is measured in square units.
- To estimate the area of an irregular shape, use a grid and count the squares contained inside the shape.

Example: Estimate the area of the shape on the grid. Each square represents 1 square inch.

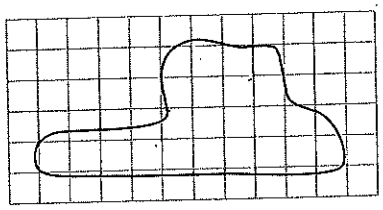


1. Count the number of whole or nearly whole squares.
2. Mark each "half square" with a dot.
3. Find the total.
   17 whole squares + 6 "half squares" = 20 squares
   The area of the shape is about 20 square inches.

Practice:

Estimate the area of each shape on the grid. Each square represents 1 cm^2.

1.



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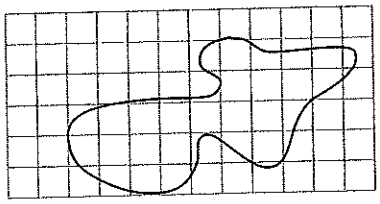

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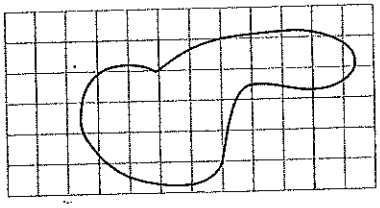

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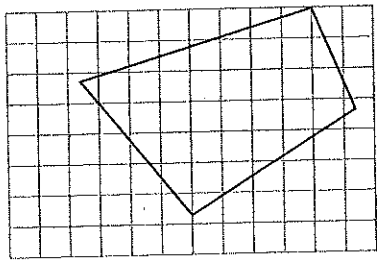

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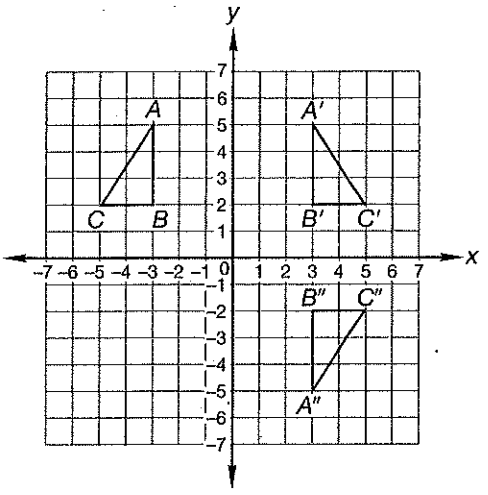
Name _____

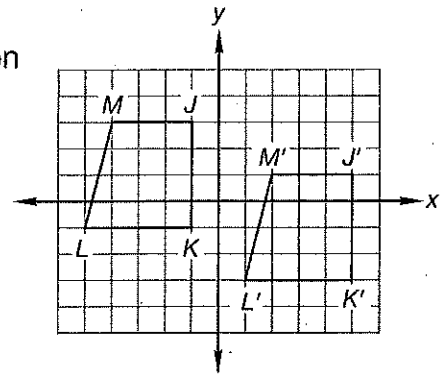
• Transformations

These **transformations** allow a figure to change position without changing size or shape.

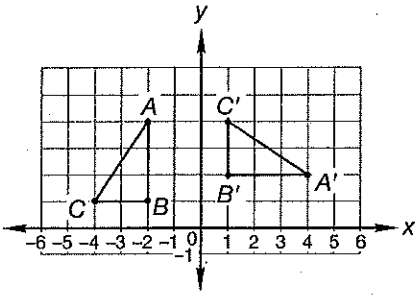
- **Flip:** A figure can flip like a coin. This is called **reflection** and makes a mirror image of the figure.
  - If a figure reflects (flips) in the *y*-axis, the reflection appears on the opposite side of the *y*-axis the same distance from the *y*-axis. $\triangle A'B'C'$ is a reflection in the *y*-axis of $\triangle ABC$.
  - If a figure reflects (flips) in the *x*-axis, the reflection appears on the opposite side of the *x*-axis the same distance from the *x*-axis. $\triangle A''B''C''$ is a reflection in the *x*-axis of $\triangle A'B'C'$.



- **Slide:** A figure can move or slide to a new position without a flip or turn. This is called **translation** and moves a figure right, left, up, or down. Quadrilateral *J'K'L'M'* is a translation of quadrilateral *JKLM* 6 units to the right and 2 units down.

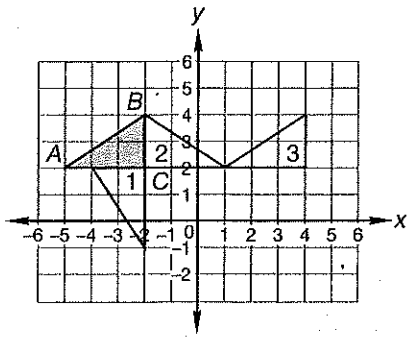


- **Turn:** A figure can turn or rotate about a specified point. This is called **rotation** and turns a figure around its *center* of rotation. The origin is the center of rotation for $\triangle ABC$ and it's image $\triangle A'B'C'$.



Practice:

Identify the transformation of $\triangle ABC$ that each figure represents.



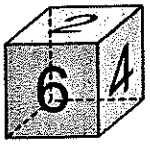
1. Figure 1 _____
2. Figure 2 _____
3. Figure 3 _____

Name _____

- **Probability and Odds**
- **Compound Events**
- **Experimental Probability**

- **Probability** is the ratio of favorable outcomes to the number of possible outcomes. The probability of an event can range from 0 (impossible) to 1 (certain), or from 0% to 100%.

  Example: The probability of a number cube landing on 2 is $\frac{1}{6}$.



- **Odds** show the ratio of favorable to unfavorable outcomes.

  Example: The odds of a number cube landing on 2 are 1 to 5, or 1:5.

- A **compound event** is composed of two or more simple events. To find the probability of two or more simple events occurring in a specific order, we multiply the probabilities of the events.

  Example: The probability of a number cube being tossed twice and landing on the number 1 twice is $\frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$.

- **Experimental probability** depends on the results of many experiments or trials. The ratio of the number of favorable outcomes to the number of trials is the experimental probability of an event.

  Example: Jan tossed a coin 60 times. It landed on heads 40 times. The probability of landing on heads using that coin is $\frac{40}{60}$, or $\frac{2}{3}$.

Practice:

1. If a coin is tossed and a number cube is rolled, what is the probability of getting tails and 2?

   _____

2. A number cube is rolled twice. What is the probability of getting an even number twice?

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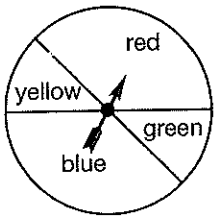
3. Mei Lee spins a spinner 50 times. The spinner lands on red 25 times. What is the experimental probability of landing on red?



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