## Warmup $4 /\left(\frac{332211}{30201}\right)$

Make sure your desk has: ONE whiteboard, ONE graphing sheet, ONE marker, ONE eraser
(You also need a calculator!)

1. (On your graphing sheet) Draw the rectangle with vertices (1, 1); $(1,3) ;(5,3) ;(5,1)$.
2. (On your graphing sheet) Perform a dilation with a scale factor of 2 and graph the new rectangle.
3. (On your warmup page) Write down the new coordinates you got.
4. (\#4 and 5 are on the next page!)

## 4) What was the scale factor???

(Figure $A$ is the preimage. $B$ is the image)

$$
k=3
$$



## 5) What was the scale factor???

(Figure $A$ is the preimage. $B$ is the image)

$$
\begin{aligned}
& k=1 / 2 \\
& \text { or } 0.5
\end{aligned}
$$



## Dice rolling

- When you roll TWO dice, how many possible c are there? 36
- How many possibilities are there for the total? 11 (Any number from 2 to 12)

|  |  | Outcome of First Die |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 1 | 2 | 3 | 4 | 5 | 6 |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 믈 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| $0$ | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| $\stackrel{\otimes}{\square}$ | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| $\stackrel{9}{y}$ | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|  | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

- Are each of these totals equally likely? Why or why not?

No; there are more combinations to get some totals than others

## TM) REEvere of TME gTM GRADE TMJO-DIES TO8S



## Dice rolling

- If you roll two dice, what is the probability that the first die is a 3 and the second die is a 4 ?

$$
\frac{1}{6} \cdot \frac{1}{6} \cdot=\frac{1}{36}
$$

- If you roll two dice, what is the probability you will get a 3 and a 4 ?

$$
3,4 \text { or } 4,3 \quad \frac{-}{36} \rightarrow \frac{-}{18}
$$

|  |  | 1 | 2 | 3 | 4 | 5 | 6 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|  | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|  | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|  | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|  | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|  | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

- What is the probability you will get a 7 ?

$$
\frac{6}{36} \rightarrow \frac{1}{6}
$$

- If you roll two dice, what is the probability you will get a 12 ?
- You flip a coin and roll a die. What is the probability you will get heads and a number higher than 4 ?

$$
\frac{1}{2} \cdot \frac{2}{6}=\frac{2}{12} \rightarrow \frac{1}{6}
$$

Guessing on a Quiz

- You take a 5-question multiple choice test. Each question has 4 choices. You did not study at all, so you guess randomly. What is the probability that you will get all 5 questions correct?

$$
\frac{1}{4} \cdot \frac{1}{4} \cdot \frac{1}{4} \cdot \frac{1}{4} \cdot \frac{1}{4}=\frac{1}{1024}
$$

## Drawing marbles from a bag

- There is a bag with 6 red marbles, 4 blue marbles, and 2 green marbles.
- If you pick a random marble, what is the probability it will be green?

$$
\frac{2}{12} \rightarrow \frac{1}{6}
$$

- You draw two marbles from the bag. You put the first marble back before you draw the second one. What is the probability both marbles will be blue?

$$
\frac{4}{12} \cdot \frac{4}{12} \rightarrow \frac{1}{3} \cdot \frac{1}{3}=\frac{1}{9}
$$

- You draw two marbles from the bag WITHOUT putting the first one back. What is the probability both marbles will be blue?



## Drawing cards

- Every deck of cards has:
- 4 suits; 13 of each suit (spades, hearts, diamonds, clubs)
- 13 "ranks"; 4 of each rank (2 through 9, Jack, Queen, King, Ace)
- If you draw one card, what is the probability of drawing...
-A spade? $\frac{\mathbf{1}}{\mathbf{4}}$
- A king? $\frac{4}{52} \rightarrow \frac{1}{13}$
- The 3 of diamonds? $\frac{1}{52}$


## Drawing cards

- You draw one card, put it back in the deck, then draw another card. What is the probability they are both hearts?

$$
\frac{1}{4} \cdot \frac{1}{4}=\frac{1}{16} \quad=.0625 \text { or } 6.25 \%
$$

- You draw two cards from the deck without putting the first one back. What is the probability they are both hearts?

$$
\frac{13}{52} \cdot \frac{12}{51}=\frac{156}{2652} \quad \approx .0588 \text { or } 5.88 \%
$$

- You draw three cards from the deck. What is probability they are all aces?

$$
\frac{4}{52} \cdot \frac{3}{51} \cdot \frac{2}{50}=\frac{24}{132,600} \quad=\frac{1}{5525} \quad \approx .00018 \text { or } 0.01 \%
$$

