The background is a light blue color filled with various mathematical symbols and diagrams in a light purple and yellow color. These include pi (π), infinity (∞), a ruler, a sine wave, a graph with axes labeled A and B, and various numbers and mathematical notations like ω, α, and β.

# Proportional & Nonproportional Relationships

# Cut on most of the solid lines

**TABLE**

number of rides	admission	total cost	
$x$	$y$	$y$	
			( , )
			( , )
			( , )
			( , )

constant rate of charge = (slope,  $m$ )

**GRAPH**

**EQUATION**

$y = mx + b$

constant rate of change (aka slope)  $\rightarrow$   $m$   
 y-intercept (the fixed amount)  $\rightarrow$   $b$   
 (will never be zero in non-proportional relationships)

Ernie went to the fair. Admission was \$3, and ride tickets were \$2 each. How much money did he spend?

The fixed amount is \$ \_\_\_\_\_

The varying amount is \$ \_\_\_\_\_

**TABLE**

number of attendees	total cost	
$x$	$y$	
		( , )
		( , )
		( , )
		( , )

so it must be proportional (that's the origin)

**GRAPH**

**EQUATION**

$y = mx + b$

dependent variable (its value is determined by the value of "x")  $\rightarrow$   $y$   
 independent variable (its value is plugged in)  $\rightarrow$   $x$   
 (will always be zero in proportional relationships)

For his birthday, Burt wants to take his friends to the movies. Each ticket costs \$2.50. How much was the total bill?

The fixed amount is \$ \_\_\_\_\_

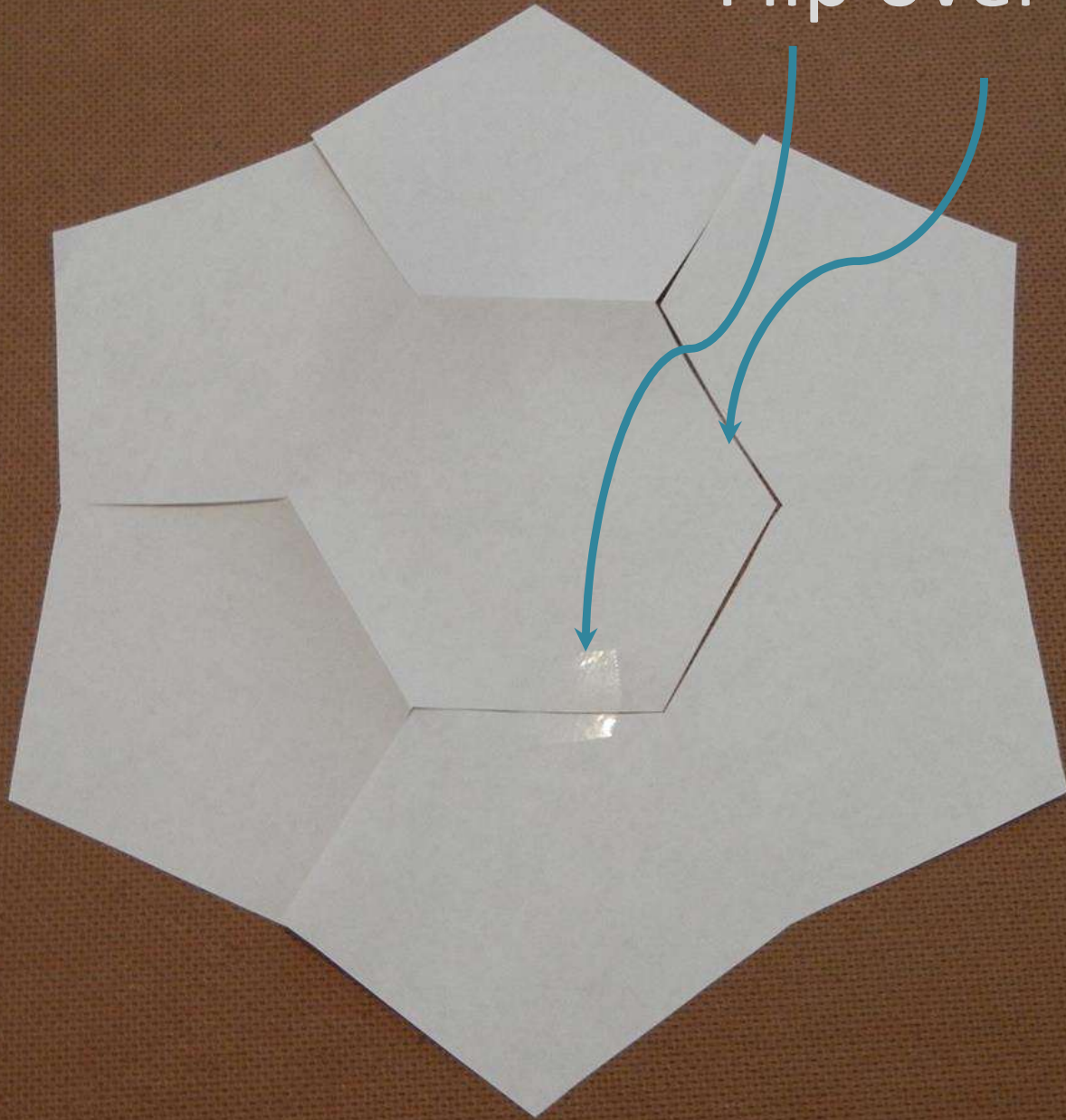
The varying amount is \$ \_\_\_\_\_

**TABLE**

number of attendees	total cost	
$x$	$y$	
		( , )
		( , )
		( , )
		( , )

**GRAPH**

Flip over and tape together



# Now cut the last two solid lines

**TABLE**

number of rides $x$	admission	total cost $y$
( )		( )
( )		( )
( )		( )
( )		( )

constant rate of change = (slope,  $m$ )

**GRAPH**

**EQUATION**

constant rate of change (aka slope)  $\rightarrow$   $mx$   
 $y$ -intercept (the fixed amount)  $\rightarrow$   $+ b$

$y = mx + b$

(will never be zero in non-proportional relationships)

Ernie went to the fair. Admission was \$3, and ride tickets were \$2 each. How much money did he spend?

The fixed amount is \$ \_\_\_\_\_  
 The varying amount is \$ \_\_\_\_\_

**NON-PROPORTIONAL RELATIONSHIP**

**PROPORTIONAL RELATIONSHIP**  
(aka Direct Variation)

For his birthday, Burt wants to take his friends to the movies. Each ticket costs \$2.50. How much was the total bill?

The fixed amount is \$ \_\_\_\_\_  
 The varying amount is \$ \_\_\_\_\_

**TABLE**

number of attendees $x$	total cost $y$
( )	( )
( )	( )
( )	( )
( )	( )

so it's the graph, so it must be proportional!

**GRAPH**

**EQUATION**

dependent variable (its value is determined by the value of  $x$ )  $\rightarrow$   $y$   
 independent variable (its value is plugged in)  $\rightarrow$   $x$

$y = mx + b$

(will always be zero in proportional relationships)

Complete the foldable  
using different colors to  
show connections

constant  
(always the same)

number of rides $x$	admission	total cost $y$	
0	3	3	(0, 3)
1	3	5	(1, 5)
2	3	7	(2, 7)
3	3	9	(3, 9)

constant rate  
of change =  
(slope,  $m$ )

NON-PRO

PROPO

# PROPORTION

number of attendees $x$	total cost $y$
0	0
1	2.5
2	5
3	7.5

so it must be proportional.  
(that's the origin.)

- (0, 0)
- (1, 2.5)
- (2, 5)
- (3, 7.5)

TABLE

to

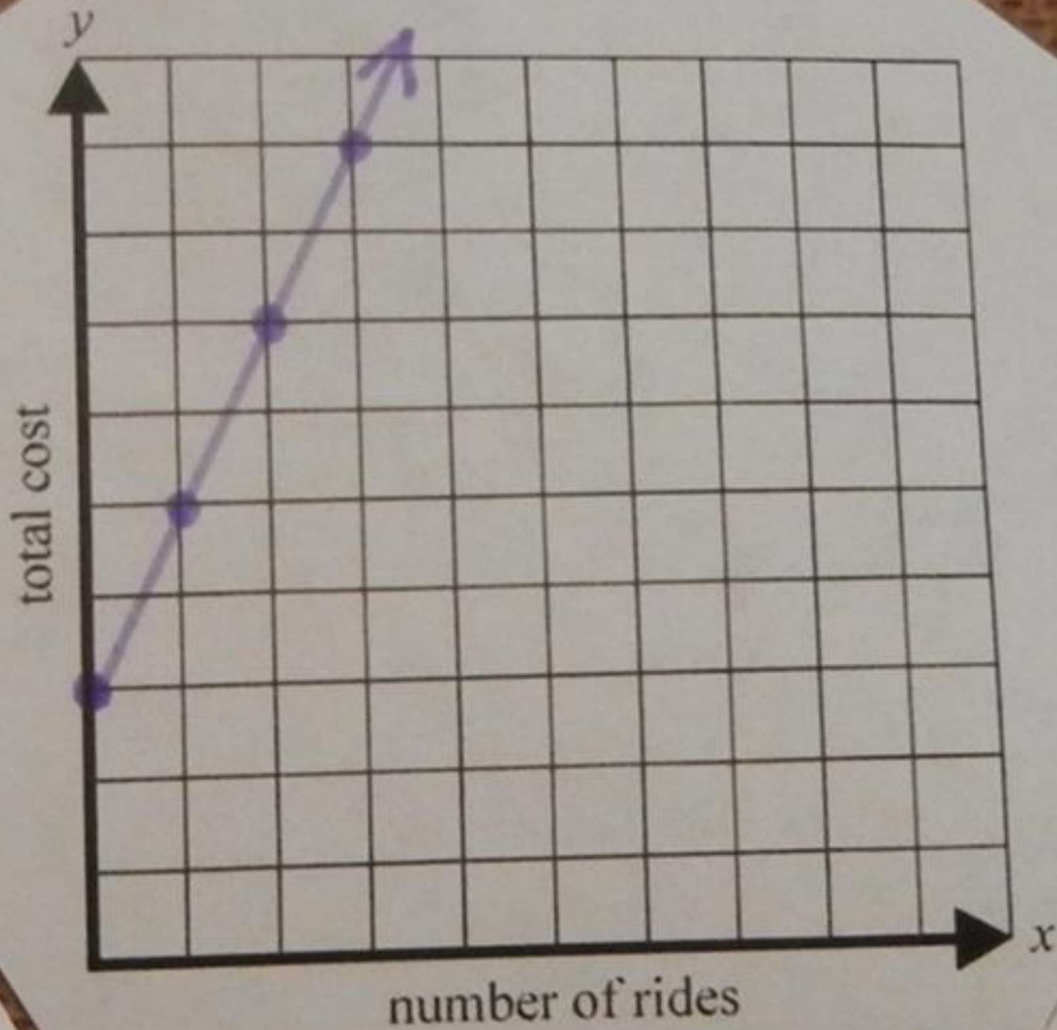
The

The

$y$

total cost

# GRAPH



constant rate of  
(aka slope)

$$y =$$

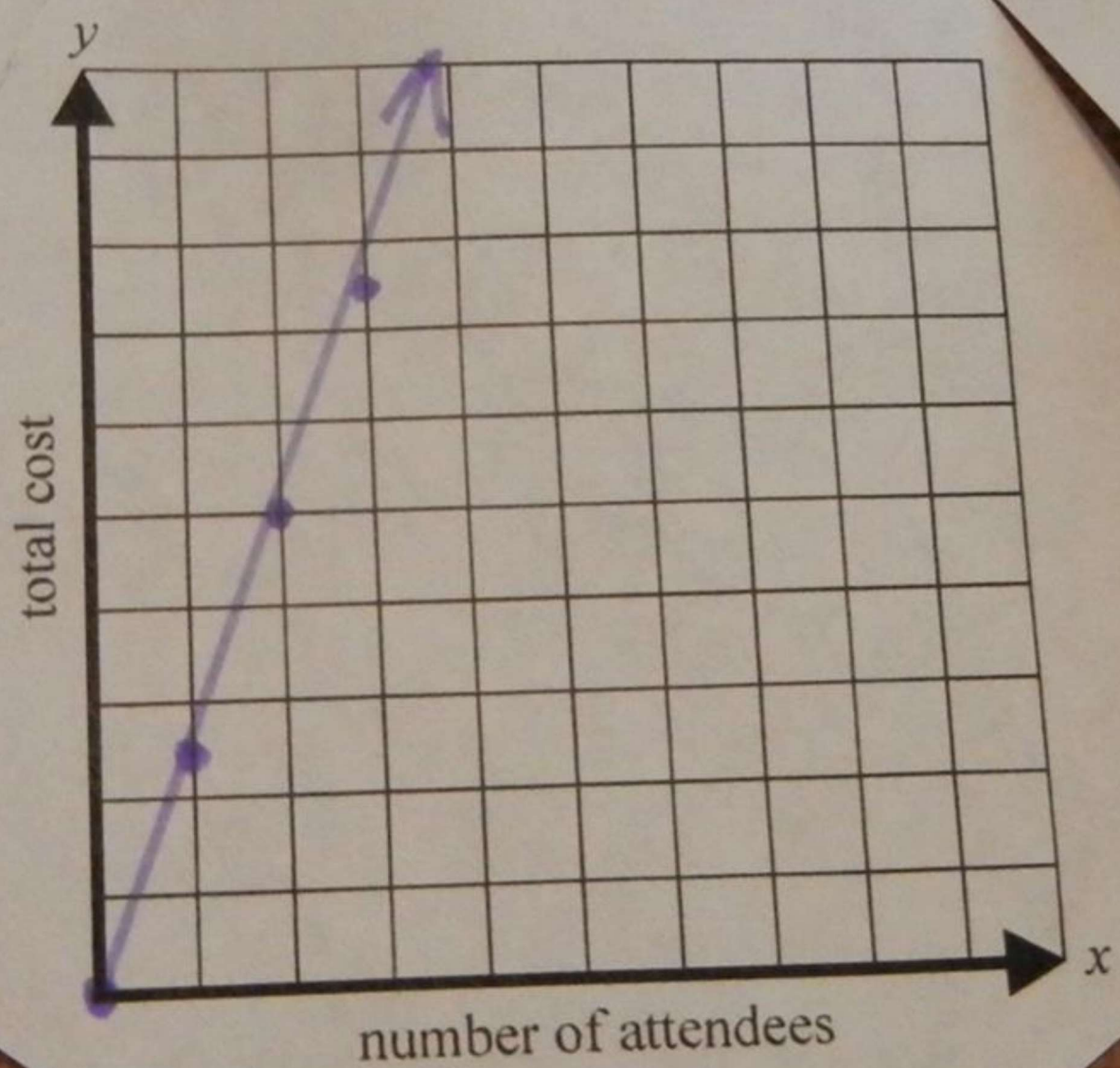
cost

(0, 3)

(1, 5)

Ernie went to the fair.  
Admission was \$3 and

The varying amount is  $\rightarrow$  2.50 per ticket



GRAPH



constant rate of change  
(aka slope)      y-intercept  
(the fixed amount)

$$y = mx + b$$

(will never be zero in  
non-proportional relationships)

EQUATION

$$y = mx$$

$$y = 2(3) + 3$$

$$y = 9$$

nd?

ride

ATIONCLIP

# RELATIONSHIP

n)  
wants  
movies.  
50.  
al bill?

0 per ticket


dependent variable  
(its value is determined  
by the value of "x")

independent variable  
(its value is plugged in)

$$y = mx + b$$

(will always be zero in  
proportional relationships)

$$y = mx$$

$$y = 2.5(3) + 0$$

$$y = 7.5$$

EQUATION

ride tickets were \$2 each.

How much money did he spend?

The fixed amount is \$ 3

The varying amount is \$ 2 per ride

## PROPORTIONAL RELATIONSHIP

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## PROPORTIONAL RELATIONSHIP

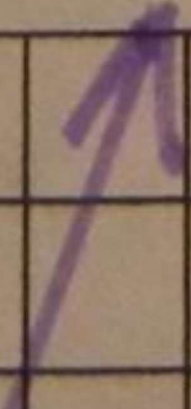
(aka Direct Variation)

For his birthday, Burt wants to take his friends to the movies

his birthday, Burt wants  
his friends to the movies.  
Each ticket costs \$2.50.  
How much was the total bill?

amount is \$ 0

amount is \$ 2.50 per ticket



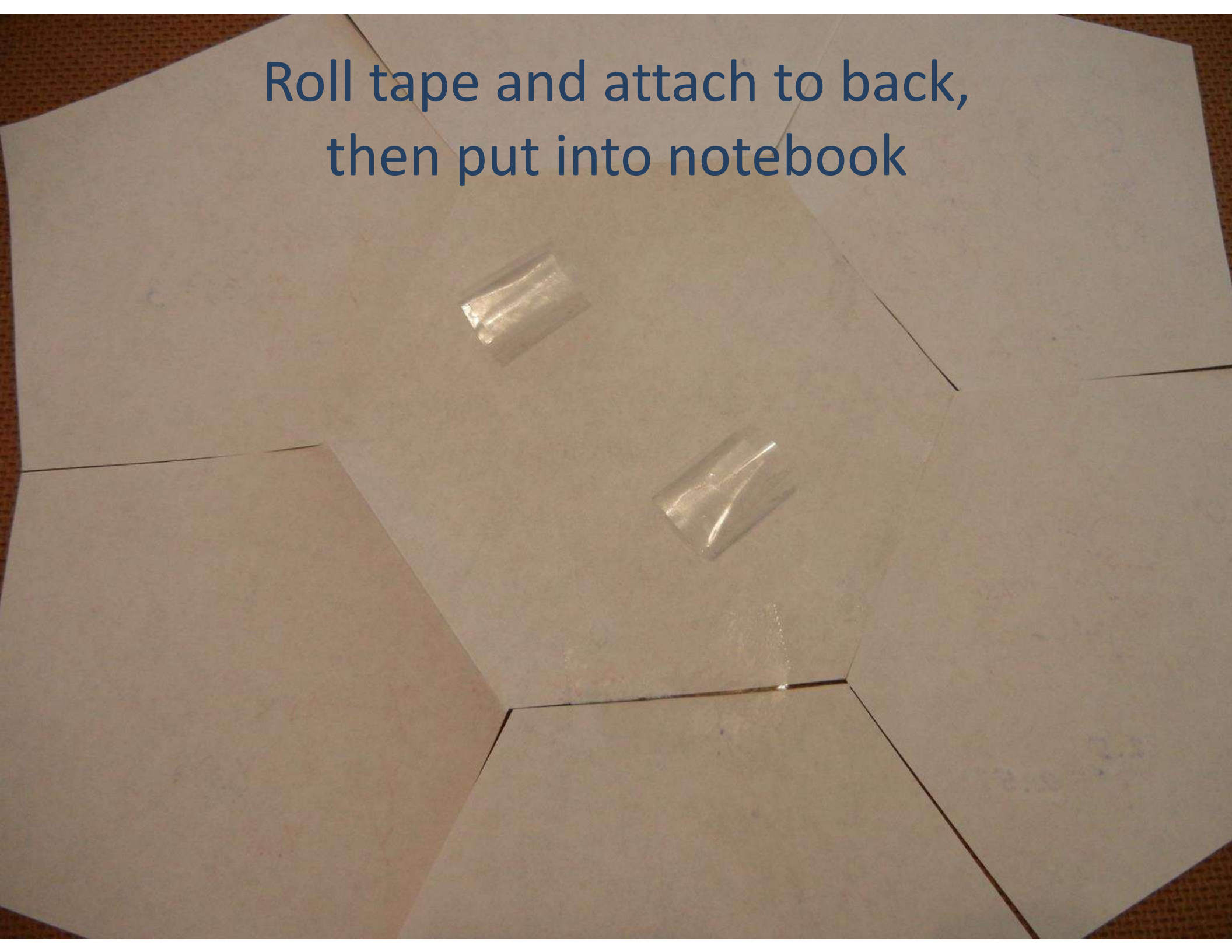

depe  
(its value  
by the

Y =

Y =

Y =

Roll tape and attach to back,  
then put into notebook



Label and decorate  
the front

