Parallel & Perpendicular Lines

Geometry Unit 2

I have included a voice recorded power point show that has automatic slide advancement. Please leave feedback if you find this helpful, and I will go back and add it to my other units.

I have also started adding detailed lesson plans to my units. Please leave feedback on if this addition is helpful to you!!

Preview

For Middle/High School Special Education

Geometry: Parallel & Perpendicular Lines Lesson Plan

Preparation

- Print out a vocabulary board for each student to use throughout unit
  - Laminate or place in page protector
- Book
  - Print out, laminate, and bind
  - OR your students can listen to the pre-recorded version
- Vocabulary cards
  - Print out a set of cards onto cardstock and laminate
  - Make one set for each student and also one for the teacher to use in I Spy games

Preassessment (do day 1 before starting lesson)

- Choose the form of the assessment that best fits the learning level of your students
- Give the assessment to assess what your students may already know
- I cannot emphasize enough how important this step is. If you want to see growth, this preassessment is so important!!

Teaching Tips

1. *Color Coding*: this is a really easy way to add more structure to a matching activity. Outline or color in an empty box or sorting label. Outline or color in the corresponding picture symbols the same colors. Becomes a color matching task.
   a. For more info, read more here: https://specialneedsforspecialkids.org/2015/09/05/using-color-coding-for-differentiation/
   b. I also have a blog post on differentiating one activity 3 ways: https://specialneedsforspecialkids.org/2018/10/22/differentiating-1-activity-3-ways-easily-and-effectively/
2. *Make you own copies of the activities*: Every day I review the activity we did yesterday. For that reason:
   a. I often complete the activity myself and often laminated it for easy review that I could use year after year.
   b. My copies were also helpful as either a model for students who needed more support or as a way for more advanced students to self-check their work.

Lesson Plans

14 days

Quick Look

Day	Activity	Day	Activity	Day	Activity
1	• Book • Vocab cards activity • Scavenger hunt • Circle map	6	• Book • Vocab cards activity • Create/draw perpendicular lines	11	• Book • Vocab cards activity • Bisecting lines
2	• Book • Vocab cards activity • Scavenger hunt • Circle map	7	• Book • Vocab cards activity • Create/draw perpendicular lines	12	• Book • Vocab cards cut and paste • Close worksheet
3	• Book • Vocab cards activity • Sorting activity	8	• Book • Vocab cards activity • Determining slopes	13	• Book • Vocab cards cut and paste • Close worksheet
4	• Book • Vocab cards activity • Identifying lines on a coordinate grid	9	• Book • Vocab cards activity • Determining slopes	14	• Assessment • Vocabulary Sudoku
5	• Book • Vocab cards activity • Identifying lines on a coordinate grid	10	• Book • Vocab cards cut and paste • Bisecting lines		

Day 2

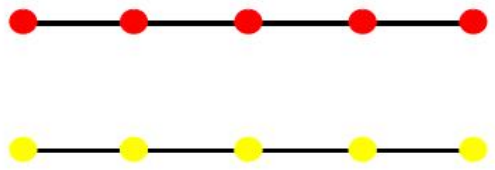
Activity	Notes	Materials

Read or listen to a recording of the book (10 minutes)	• Read through the story, asking lots of questions
	  ○ Therefore it usually takes me a little longer to read each day. I can ask more questions as they get more familiar with the material.
	  ○ You don't want to ask so many questions you lose the flow of the story, but enough to make sure your students are truly engaged
	• Continue to make connections between book and vocabulary board
		• book
		• Vocabulary board

Vocabulary cards I Spy Game (10 minutes)	• I play this game, or variations of it the first few days
	  ○ Determine how many cards your students can handle in front of them. This can vary, some students may be able to have all the cards, so may only be able to handle a field of 3-5
	• Since this is the first time playing this game, I make it easy. Hold up a card, and have students find the matching one and hold it up
	• Discuss relevant points on the card
	  ○ You can also play this game in this manner having them find the symbol on their vocabulary board
		• Vocabulary cards (student set and teacher set)
		• Vocabulary board

Scavenger Hunt (10 minutes)	• Have students look around the room or walk around the school looking for examples of parallel and perpendicular lines	
Circle map review (5 minutes)	• Review the worksheet completed yesterday	• Worksheets completed yesterday
Circle map (10 minutes)	• Do one of the circle maps • Choose the best version depending on the learning level of your students (see worksheet directions for more details) • Add color coding if needed • Students complete the worksheet	• Worksheet • Scissors • Glue

Parallel lines are lines that have no points in common and they will never cross or touch each other as they travel in both directions.



29 page book

So, when 2 lines cross and form a 90^0 angle, then they are perpendicular. Look around, you will see lots of examples of right angles.

Next, what does reciprocal mean? It means the opposite, or turn it upside down. Let's practice.

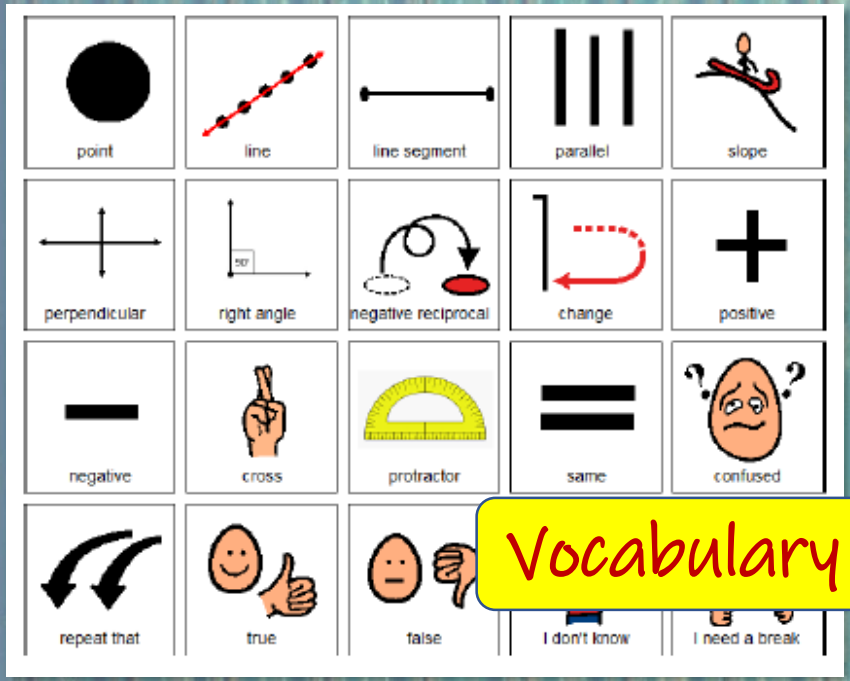
Parallel lines also have the same slope. Do you remember what slope is?

Perpendicular lines actually have slopes that are negative reciprocals. What does that mean??????

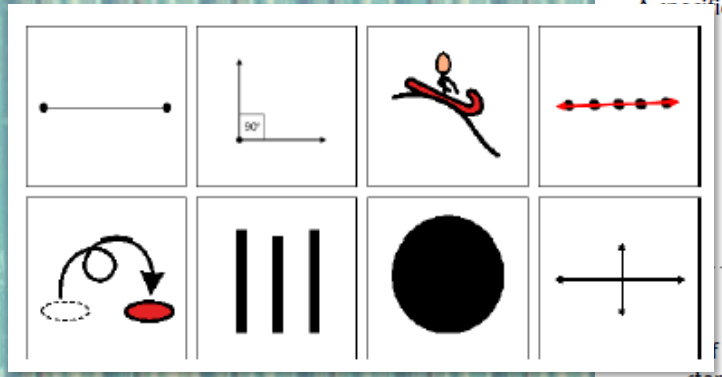
Here is an example if the slope = 2:

1. Change the sign (make it negative) -2
2. How else can you write -2 to make it easier to flip? $-\frac{2}{1}$
3. Now flip it and keep it negative. $-\frac{1}{2}$

You just made a negative reciprocal!!



Vocabulary board



point

A specific location, and is drawn as a dot.

line

A series of points joined together that extend in opposite directions forever.

Line segment

A series of points joined together with a starting and ending point.

parallel

Lines that have no points in common and never cross.

42

Cut & Paste

8 vocab cards

slope

Number that tells you how steep a line is.

perpendicular

2 lines that cross one another and form right angles.

Right angle

The angle formed when 2 perpendicular lines cross and perfectly square or 90°.

Negative reciprocal

The original number flipped upside down with the opposite sign.

A series of points joined together that extend in opposite directions forever.
The original number flipped upside down with the opposite sign.
Lines that have no points in common and never cross.
The angle formed when 2 perpendicular lines cross and perfectly square or 90°.

slope

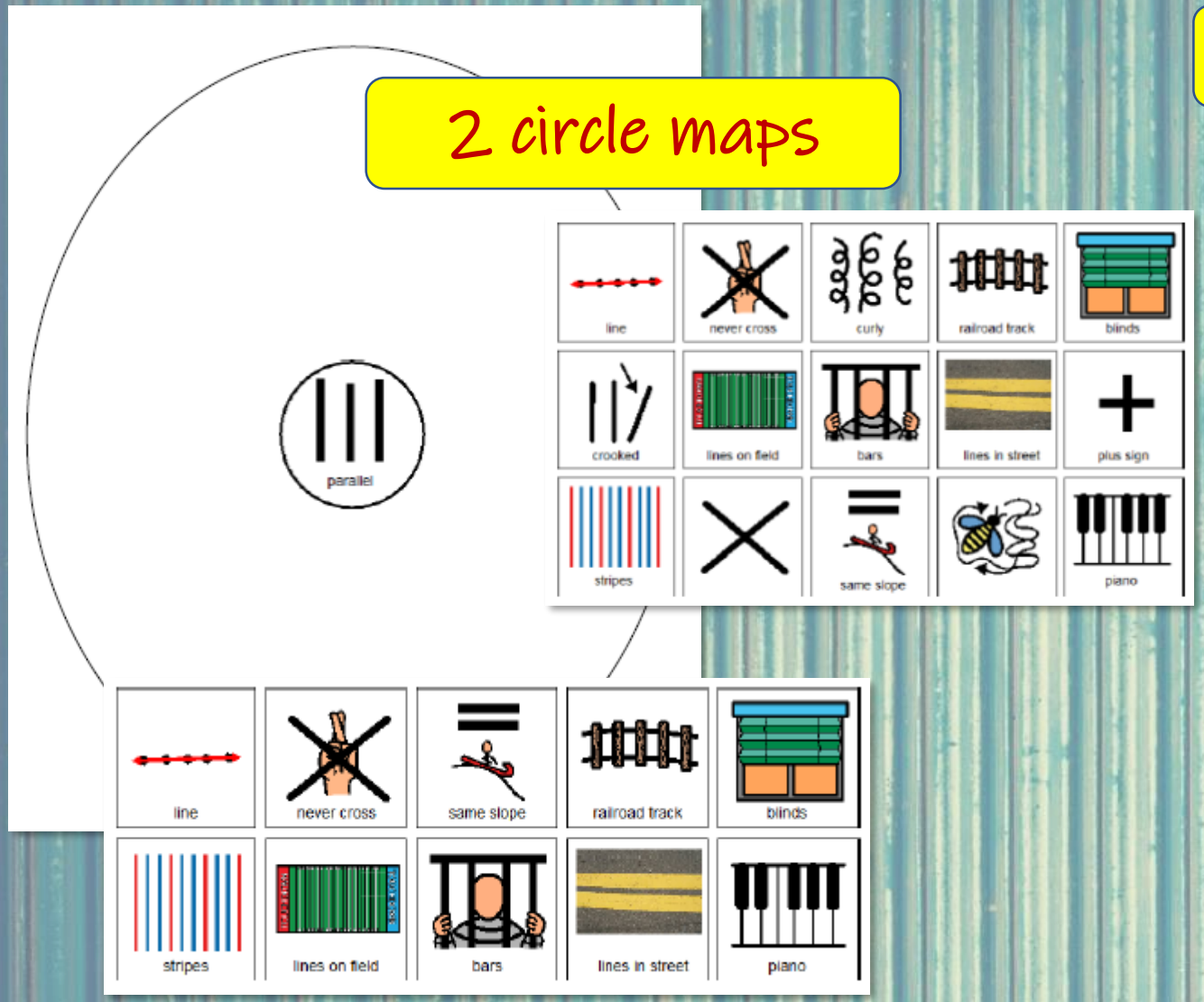
perpendicular

Right angle

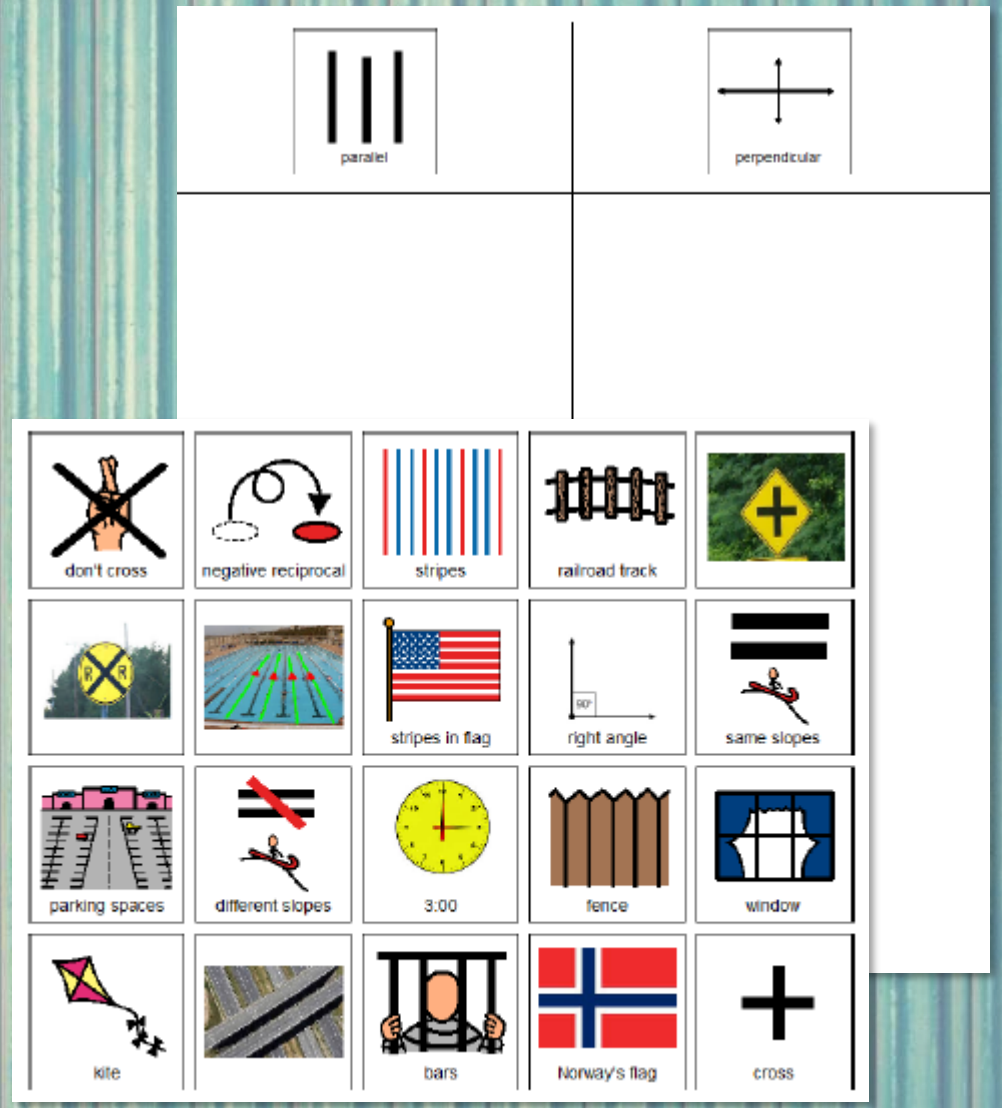
Negative reciprocal

47

2 circle maps

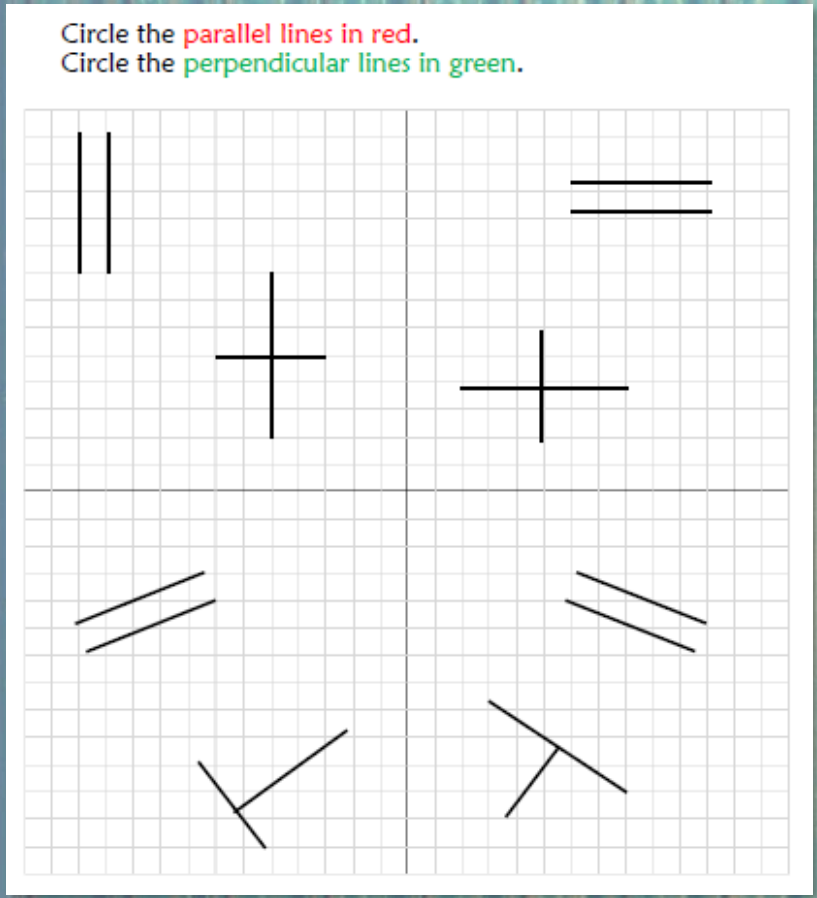


Sorting activity

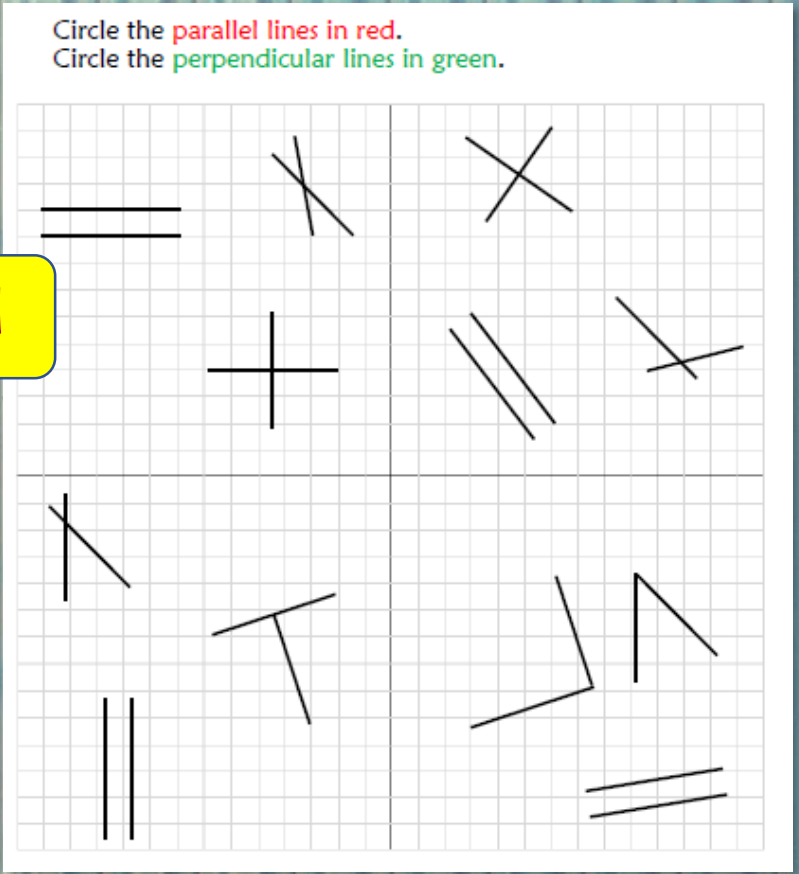


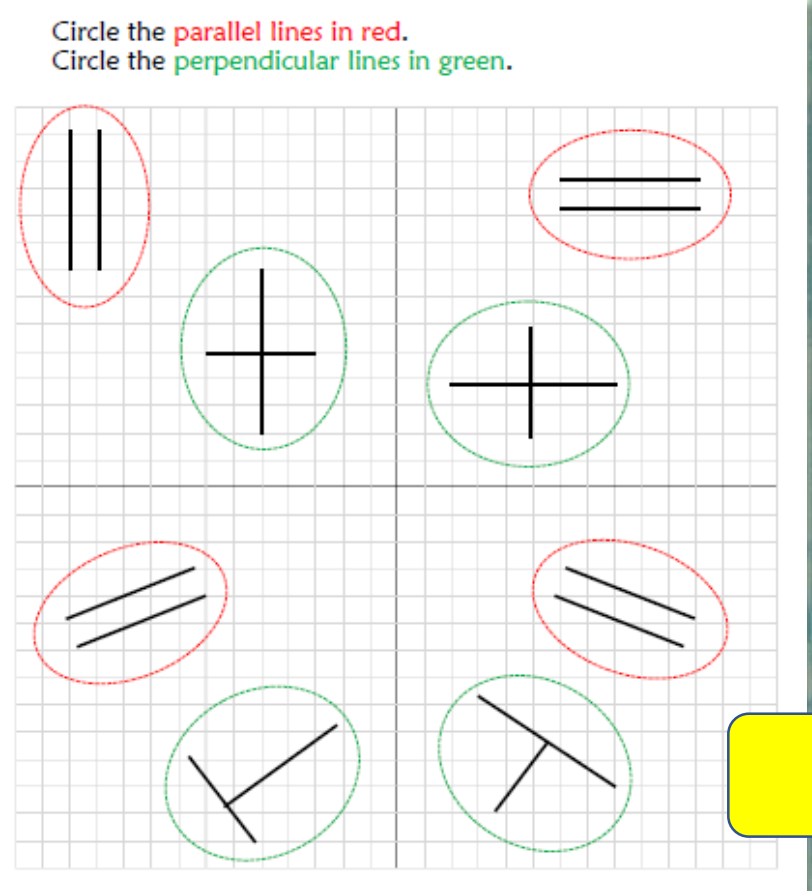
Errorless option

Identifying Lines



Distractors added

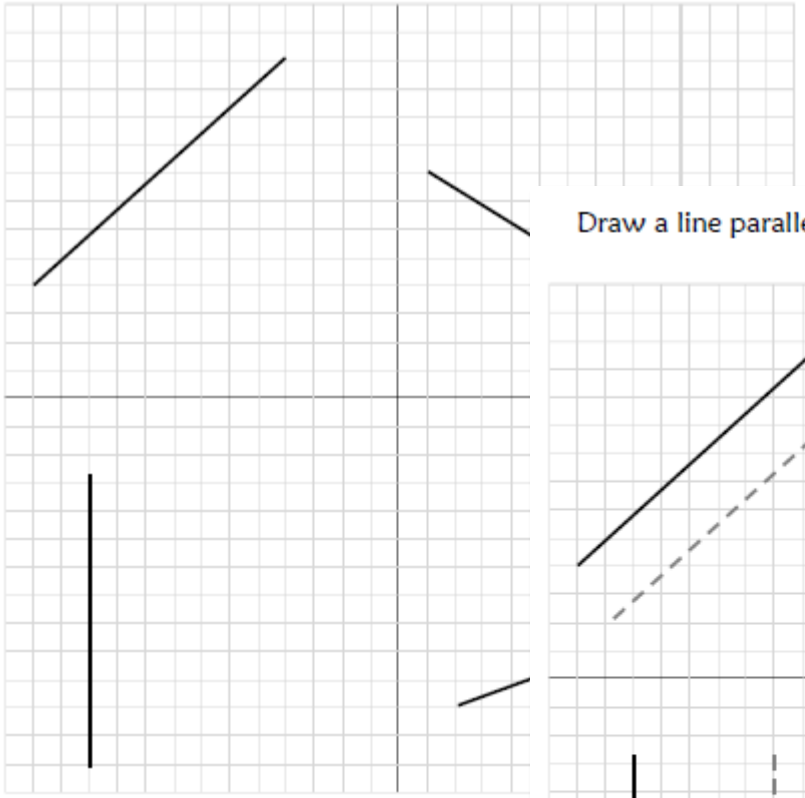




Color-coded

Drawing lines

Draw a line parallel to each line below.



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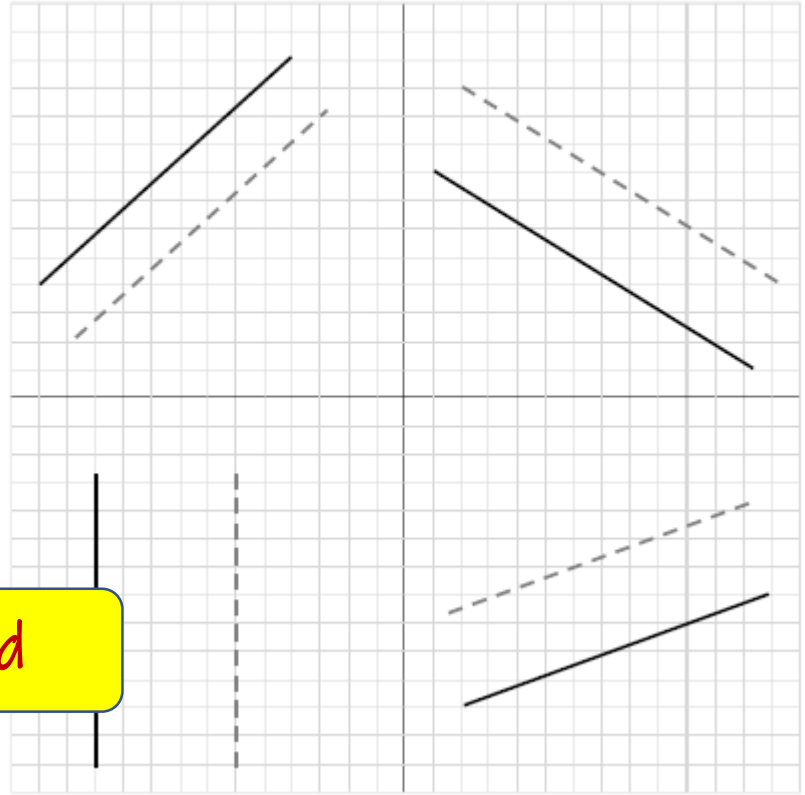
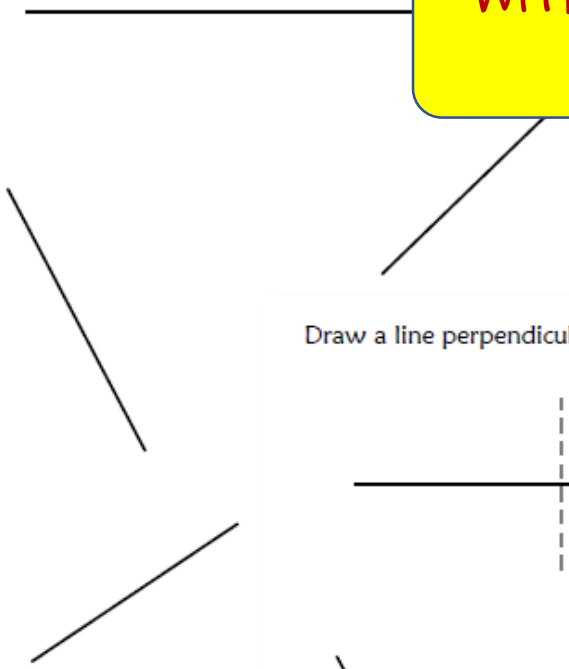


Draw a line perpendicular to each line below.



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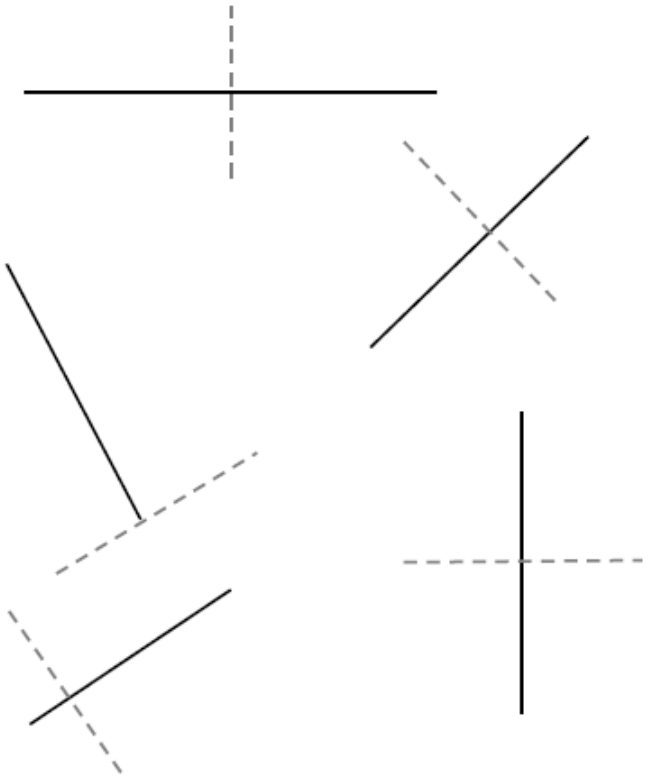


With and without grid

Differentiated

Determining slope

2 levels

Bisecting lines

Look at the two line in each example, and determine if their slopes would be the same or different. Circle the correct answer.

= ≠	= ≠
= ≠	
= ≠	
= ≠	
= ≠	

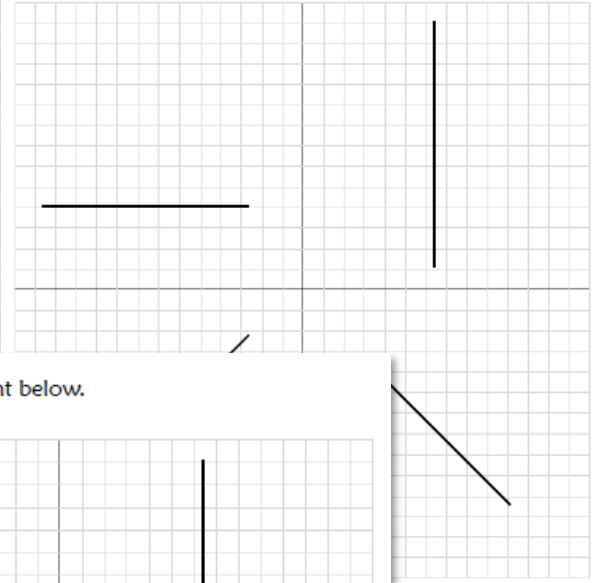
Look at the two line in each ex
their slopes would be the same
correct answer.

= ≠	
= ≠	
= ≠	
= ≠	= ≠
= ≠	= ≠

Look at the two line in each example, and determine what the slope of line 2 would be if given the slope of line 1.

Slope: Line 1= 4 Line 2=	Slope: Line 1= ¼ Line 2=
Slope: Line 1=-5 Line 2=	Slope: Line 1= 6 Line 2=
Slope: Line 1= 0 Line 2=	Slope: Line 1= -½ Line 2=
Slope: Line 1= -4 Line 2=	Slope: Line 1= 6 Line 2=
Slope: Line 1= ¾ Line 2=	Slope: Line 1= -6 Line 2=

Bisect each line segment below.



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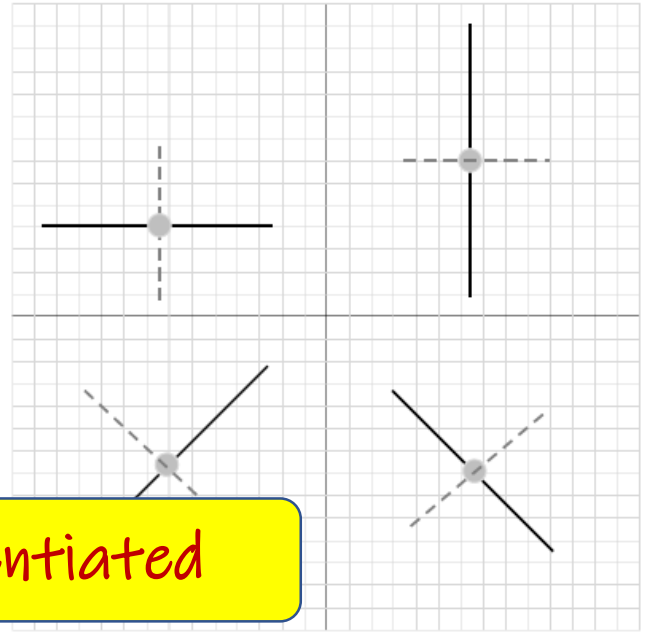


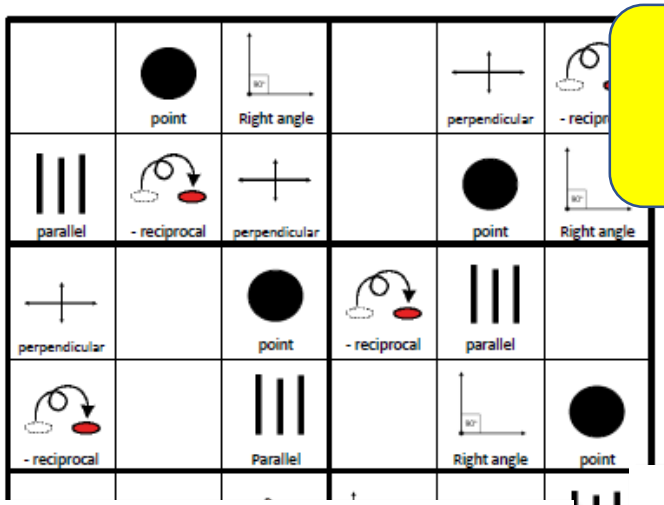
Differentiated

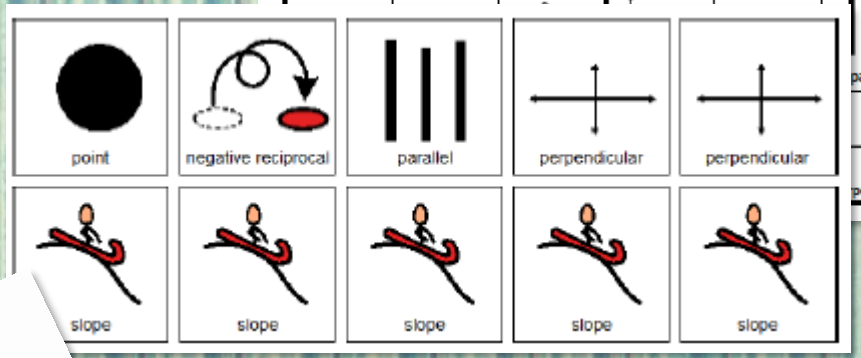
2 Close worksheets

Parallel Lines

1. Parallel lines do _____ cross.
2. Parallel lines will travel forever and never _____.
3. Parallel lines have the same _____.
4. Parallel lines have no _____ in common.
5. _____ is an ex… …el lines.

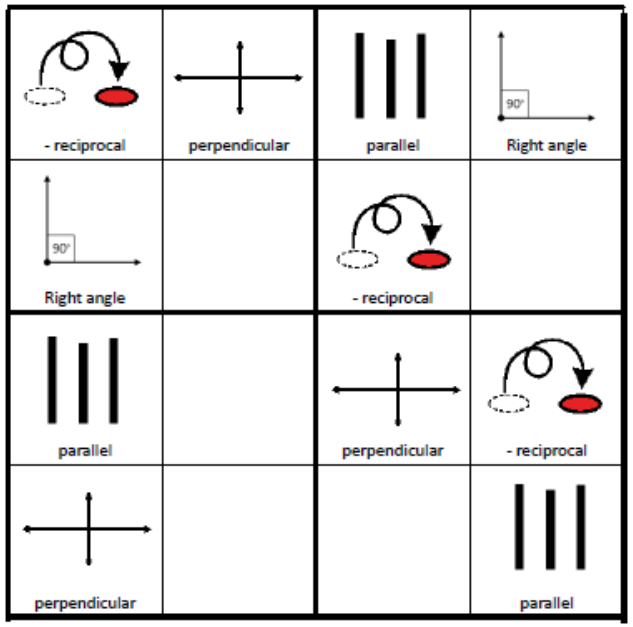
Parallel and Perpendicular Lines





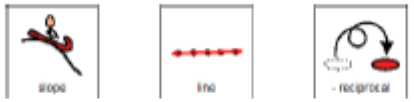
Vocabulary Puzzle

Parallel and Perpendicular Lines



Assessments

1. This is made up of a series of points that are connected:



2. How many points do parallel lines have in common?

3. What is formed when perpendicular lines cross?

4. Circle all the examples of parallel lines.

5. What tool do you use to measure an angle

6. If the slope of one parallel line is 4, what is the slope of the other parallel line?

7. If the slope of one perpendicular line is ½, what is the slope of the other perpendicular line?

8. Circle all the examples of perpendicular lines?

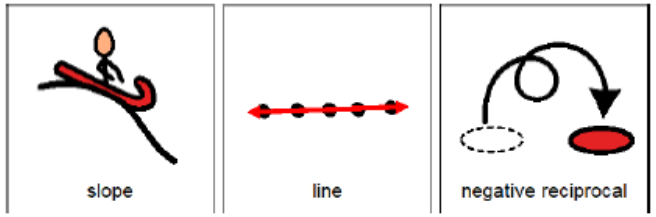
9. True or False. Every time 2 lines cross they are perpendicular.

10. When you bisect a line, you divide it:

1. This is made up of a series of points that are connected:
   A. Slope
   B. Line
   C. Negative reciprocal
2. How many points do parallel lines have in common?
   A. All
   B. 10
   C. 0
3. What is formed when perpendicular lines cross?
   A. Right angle
   B. Curls
   C. point
4. Circle all the examples of parallel lines.

e to measure an angle?

Q 1



Q 2