
Small-Group Discussions: Place Mat

MATHEMATICS Grades 10-12

In this strategy, students are divided into small groups of 4 to 6 students and gathered around a piece of chart paper. The chart paper is organized with sections for each student to record their ideas and a central section for students to summarize their individual ideas. First, students individually think about a question and write down their ideas on their own section of the chart paper. Then students share ideas to discover common elements, which can be written in the centre of the chart paper.

Purpose

- Provide all students with an opportunity to share ideas and learn from each other in a cooperative small-group discussion.

Payoff

Students will:

- have an opportunity to reflect and participate.
- feel that their ideas are valued, enjoy interacting with others, and extend their learning by listening to the ideas of others and accomplish a small group task.

Tips and Resources

- The strategy can be used with a wide variety of questions and prompts.
- Use the *Place Mat* strategy for a wide range of learning goals, for example:
 - to encourage students to share ideas and come to a consensus about a concept/topic;
 - to activate the sharing of prior knowledge among students;
 - to help students share problem-solving techniques;
 - to facilitate peer review and coaching on a particular type of problem or skill;
 - to take group notes during a video or oral presentation;
 - to summarize learning after the lesson and be used as an opening review for the subsequent lesson.
- Groups of 4 students are ideal for placemat, but it can also work with up to 6 students in a group.
- You may choose several questions or issues for simultaneous consideration in a *Pace Mat* strategy. To start, each group receives a different question or issue to work on. Once they have completed their discussion, the groups rotate through the various questions or issues until all have been explored.
- *Place Mat* also works well as an icebreaker when students are just getting to know each other.
- See Teacher Resource, *Placemat - Template and Sample. Beyond Monet*, pp.172-173
TIPS: Section 4 – TIPS for Teachers

<http://www.curriculum.org/occ/tips/index.shtml>

Further Support

- Discuss, record, and post a labeled diagram of the *Place Mat* on the board, so that students always have a visual reference of the organization and required actions.
- Consider the composition of the small groups, and vary the membership according to the students' styles of learning and interaction, subject-matter proficiency, and other characteristics. However, note that some groups will require more teacher support in carrying out the task than other groups.
- Some students may benefit from being able to “pass” during group sharing. Students should know that they can pass once, but they need to prepare themselves for the next round of sharing.
- Use the placemats as a record of collective student thinking and post their ideas for other groups to see.

Small Group Discussions: Place Mat

MATHEMATICS Grades 10 - 12

Notes

What teachers do	What students do
<p>Before</p> <ul style="list-style-type: none"> • Divide students into small groups of 4 or 5. • Decide on a question (or concept or problem) for the centre of the placemat. • Distribute chart paper and markers to each group. • Ask the students to divide the chart paper into sections equal to the number of students in the group, leaving a circle/oval/rectangle in the centre of the chart for the recording of the group consensus. 	<ul style="list-style-type: none"> • Organize the placemat according to the number of students in their small group, so that there are sufficient sections for the students and a center rectangle for recording their group consensus ideas.
<p>During</p> <ul style="list-style-type: none"> • Direct each group member to think about, then silently write ideas/information that relate to the question in their personal area of the chart paper. Give students a pre-determined amount of time. 	<ul style="list-style-type: none"> • Gather their thoughts about the chosen question and write silently in their own area of the paper, respecting the space and silence of all members of the group.
<p>After</p> <ul style="list-style-type: none"> • Give a signal for students in each group to discuss their ideas and information and to agree upon a response to be shared with the entire class. • Call on one member from each placemat group to share their group’s response with the whole class. • Assess <i>for</i> understanding by listening to student responses. • Use information gained throughout the activity to inform instructional decisions. • Have students post the charts to further share their group’s thinking with the class. 	<ul style="list-style-type: none"> • Take turns sharing ideas with the group. • Engage in discussion with all group members to reach consensus on a group response. • Use communication skills, such as active listening and requesting clarification. • Record the group response in the center of the placemat. • Actively listen as each group’s placemat is presented. • Post the chart for further sharing with the class and as a record of mathematics learned so that the students and teacher can make reference to it in subsequent lessons.

Adapted from: TIPS: Section 4 – TIPS for Teachers
<http://www.curriculum.org/occ/tips/index.shtml>



Template:

Write quietly on your own in your section of the border for several minutes.	
	Through group sharing, summarize the key ideas and information for the question or concept.

Sample:

Take a few minutes to think about and then individually write down what you know about **measuring and calculating the area of a rectangle** (reviewing/summarizing concepts).

<p><i>Measure in square units by seeing how many square units cover the rectangle. Calculate – 6 cm x 8 cm rectangle = 48 cm²-</i></p>	<p><i>Measure - Multiply the number of rows by the number of columns in a rectangle on square grid paper. Calculate – length x width of a rectangle = area of a rectangle in square measurement units.</i></p>
	<p>Measuring and Calculating the Area of Rectangles <i>Can measure by counting the number of square units. Can calculate the area by multiplying the 2 linear dimensions of the rectangle.</i></p>
<p><i>Measure – the number of square tiles that cover the floor in a room. Calculate – multiply the length of one side by the length of the other side of the rectangle.</i></p>	<p><i>Measure the area by counting the number of square tiles that cover the rectangle. Calculate area by multiplying length and width and get square units.</i></p>

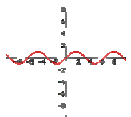


Template:

<p>Write quietly on your own in your section of the border for several minutes.</p>	
<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p>Through group sharing, summarize the key ideas and information for the question or concept.</p> </div>	

Sample:

Take a few minutes to think about and then individually write down what you know about the **sinusoidal function** (reviewing/summarizing concepts).

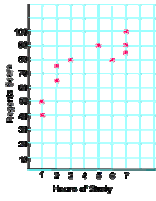
<p><i>graph of $y = \sin (2x)$ from $x = 0$ to $x = 2 \pi$. have to compress the graph of $y = \sin x$ by one-half horizontally. This changes the period from 2π to $2 \pi / 2$. So this sinusoidal function has a period of π. To draw the graph from $x = 0$ to $x = 2 \pi$ you'll have to draw two complete cycles of the graph.</i></p>	<p><i>Sinusoidal functions have period lengths that are multiples of 360° or 2π which stretches or compresses the sine function</i></p>
<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p>Sinusoidal Function</p> <p><i>A sinusoidal function is a  function that is like a sine function and can be produced by shifting, stretching or compressing the sine function</i></p> </div>	
<p><i>The graphs of $y = \sin x$ are called sinusoidal waves. The graph repeats itself as it moves along the x-axis in cycles called periods. For $y = \sin (1)x$ is changed to $y = \sin 2x$. There are two periods in the space where there was one. That means periods occur twice as often or we say they are one-half as long.</i></p>	<p><i>The period of each base sinusoidal curve, $y = \sin \theta$ or $y = \cos \theta$, is 360° or 2π. The period is $360^\circ / k$ or $2\pi / k$ for $y = \sin k\theta$ or $y = \cos k\theta$</i></p>

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<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p>Through group sharing, summarize the key ideas and information for the question or concept.</p> </div>	

Sample:

Take a few minutes to think about and then individually write down what you know about **scatter plots** (reviewing/summarizing concepts).

<p><i>Points on a graph</i> <i>Label axes, write title</i> <i>Line of best fit</i> <i>Extend line</i> <i>Curve of best fit</i></p>	<p><i>Ordered pairs on a graph</i> <i>Shows trends</i> <i>Interpolate</i> <i>Extrapolate</i></p>
<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p>Scatter Plots</p> <p>Graphical model used to determine if a relationship exists between two variables. It is also used to make predictions based on the given data.</p> <div style="text-align: right;">  </div> </div>	
<p><i>Points</i> <i>2 variables</i> <i>Used to show data</i> <i>Can make predictions</i> <i>Compares 2 sets of data</i></p>	<p><i>Graph points</i> <i>Put line of best fit through points</i> <i>Make predictions</i> <i>Strong or weak correlation</i> <i>Positive or negative correlation</i></p>

