Math DesCartes: Estimation and Accurate Computations

Skills: Whole Numbers – Multiplication and Division

Students:	DesCartes Skills: (Skills not related to this activity have been deleted)
	RIT 221-230: • Uses multiplication strategies to develop computational fluency (e.g., doubles, 9-patterns, decomposing, partial products)
	RIT 211-220: • Instantly recalls basic multiplication and division facts in a table • Performs mental computation with multiplication
	RIT 201-210: • Instantly recalls basic multiplication facts where one factor is 6-12 and the other factor is 0-12 • Instantly recalls basic multiplication and division facts in a table • Performs mental computation with multiplication
	RIT 191-200: • Instantly recalls basic multiplication facts where one factor is 6-12 and the other factor is 0-12 • Performs mental computation with multiplication
	RIT 181-190: • Multiplies basic facts to 10 x 10 vertically
	RIT 171-180: • Instantly recalls basic multiplication facts where one factor is 0-5 and the other factor is 0-12 • Multiplies basic facts to 10 x 10 vertically
	RIT 161-170: • Instantly recalls basic multiplication facts where one factor is 0-5 and the other factor is 0-12

Lesson Title: Product Lines Game

Standard/Concept for All:

3rd Grade: M.1.2.4 Multiply whole numbers through 10 x 10
4th Grade: M.1.2.1 Recall multiplication facts through 10 x 10.
5th Grade: M.1.2.1 Recall basic multiplication and division facts up to 10's.
6th Grade: M.1.2.1 Recall basic multiplication and division facts from 12 x 12 Times Table.

For Students Ready for a Challenge:

Lesson/Activity:
- Demonstrate game by choosing a student volunteer and playing part of a game in front of the class. Explain how to win & the basic rules.
- In pairs, have students play the game with each other. You may want to have students switch partners after each game or after 2-3 games.

Resources:
- "Product Lines 1-12" game board
- Vis a Vis pens to mark laminated game boards or other game markers if playing on regular paper
- Optional: Calculator or times table chart for reference

Means of Assessment:
- Accuracy and speed of multiplication, observation

For Most Students:

Lesson/Activity:
- Same as above

Resources:
- "Product Lines 1-10" game board
- Vis a Vis pens to mark laminated game boards or other game markers if playing on regular paper
- Optional: Calculator or times table chart for reference

Means of Assessment:
- Accuracy and speed of multiplication, observation

For Students Needing Extra Support:

Lesson/Activity:
- Same as above, except the winner is the first to get 4 in a row instead of 5

Resources:
- "Product Lines 1-5" game board
- Vis a Vis pens to mark laminated game boards or other game markers if playing on regular paper
- Optional: Calculator or times table chart for reference

Means of Assessment:
- Accuracy and speed of multiplication, observation

Closure/Summary for All:

- Discuss strategies, how the games went
- Remind students that getting better at multiplication facts will help them in every math class they ever take

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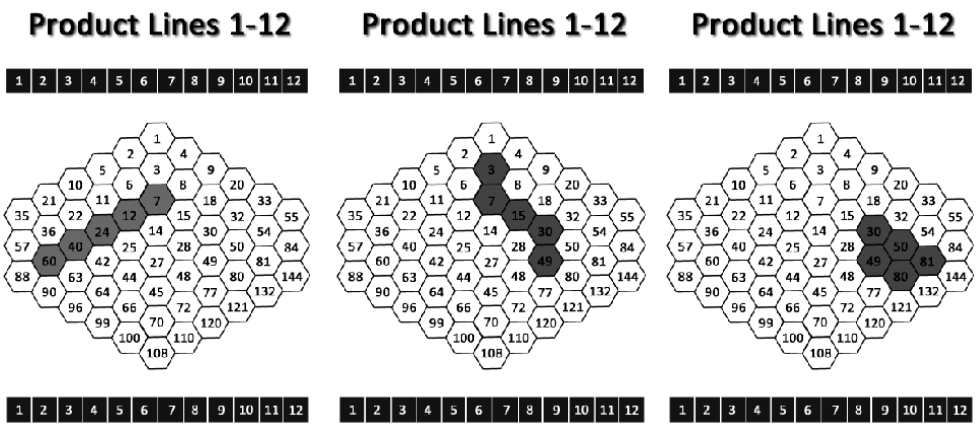
How to Play the Product Lines Game

Materials:
- One game board for every two students
- If game boards are laminated, give students different colored Vis a Vis pens to mark their places and a damp paper towel to wipe off the board
-OR- Give students game markers (such as small colored disks or squares of colored paper) to mark their places

How to Win:

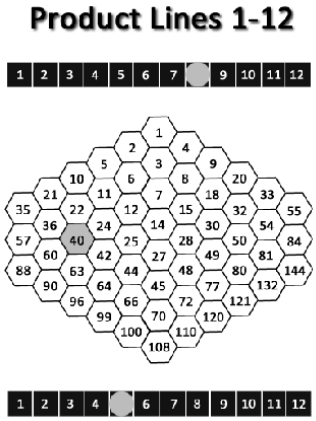
- The first player to get five hexagons connected (in any pattern) wins.

(Play to 4 instead of 5 on the 1-5 game board.)

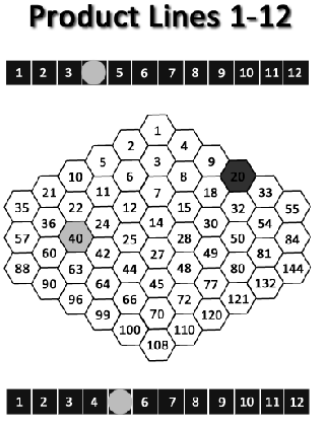


To Play:

- **First,** Player One chooses a number on the top row and a number on the bottom row and marks both.
- Then he or she multiplies the numbers together, finds the product on the game board and marks that product with his/her color.



- Next, Player two chooses to keep the number on either the top or bottom row and moves the other marker. In the example, he keeps the 5 on the bottom and chooses the 4 on the top.
- Then he or she multiplies the numbers together, finds the product on the game board and marks that product with his/her color.



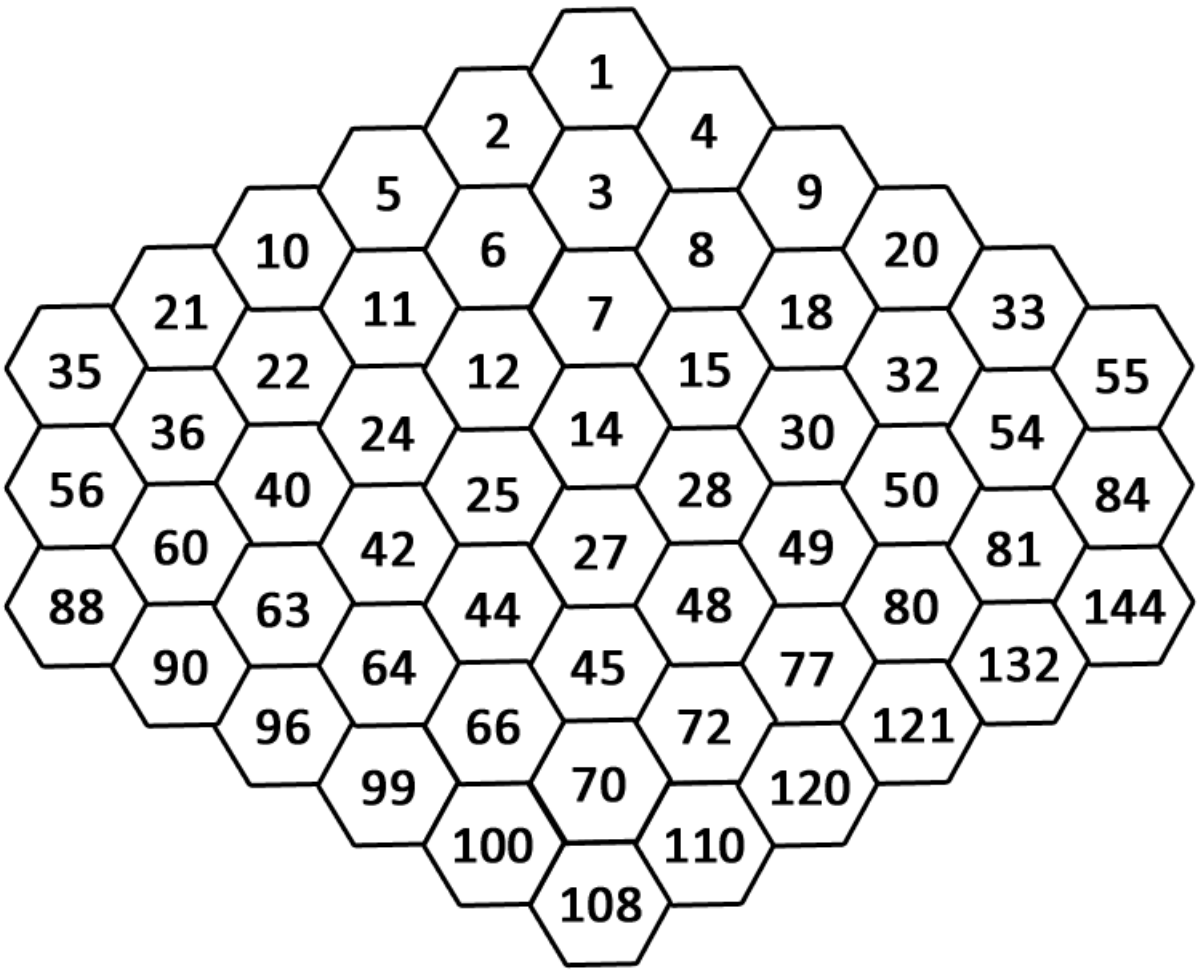
- Then Player One chooses which number to keep and selects a new on the other row to get a new product.

- Players continue taking turns until one player gets five hexagons connected.

Possible Strategies: (students may come up with these on their own or you may suggest them)
- Try to play on the opposite side of the board from your opponent so he's less likely to block you.
- Intentionally try to block your opponent.
- Choose the row numbers so that your opponent can't get the product he/she needs to win. (For example, if getting 56 would help him win, make sure not to choose the numbers 8 or 7.)

Product Lines 1-12

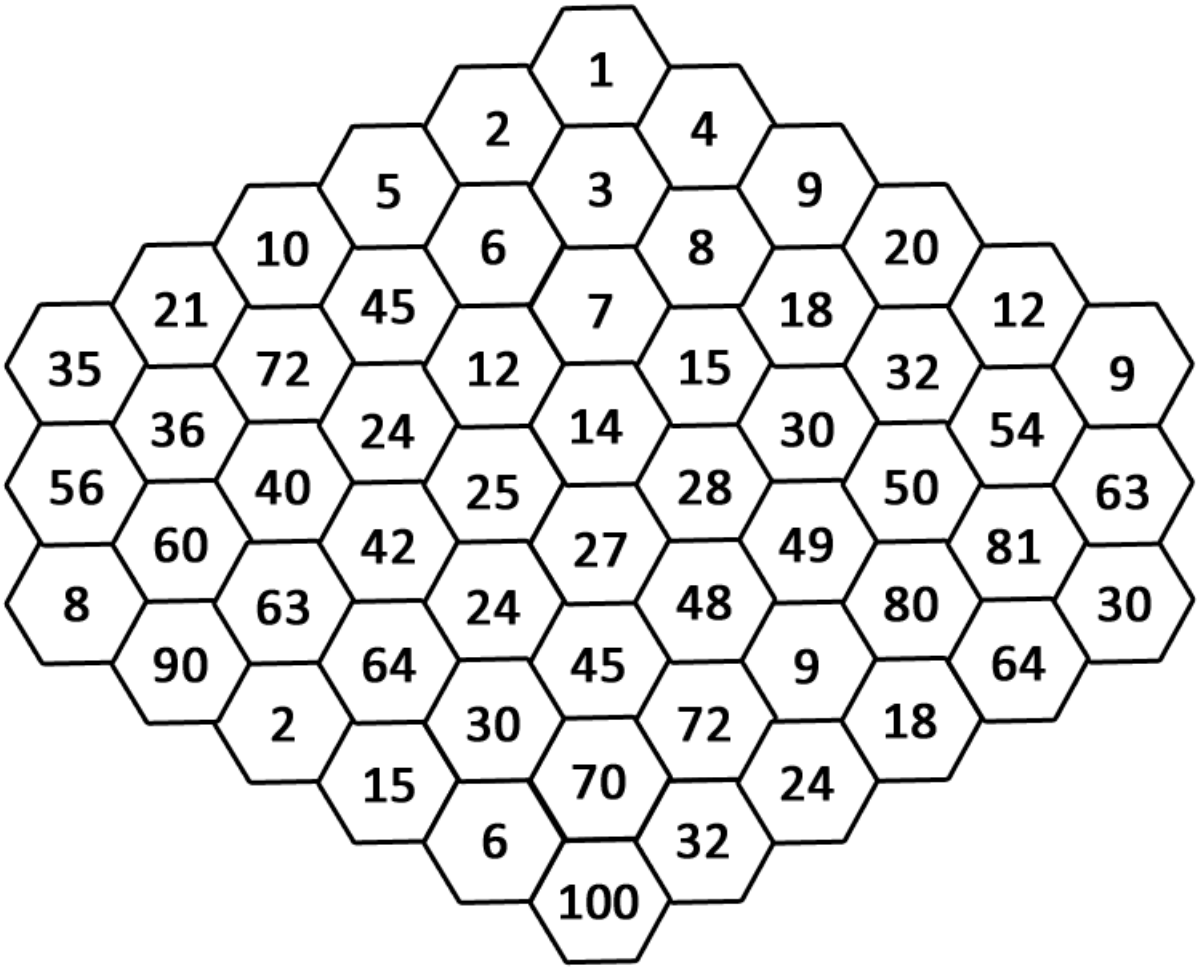
1	2	3	4	5	6	7	8	9	10	11	12



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

Product Lines 1-10

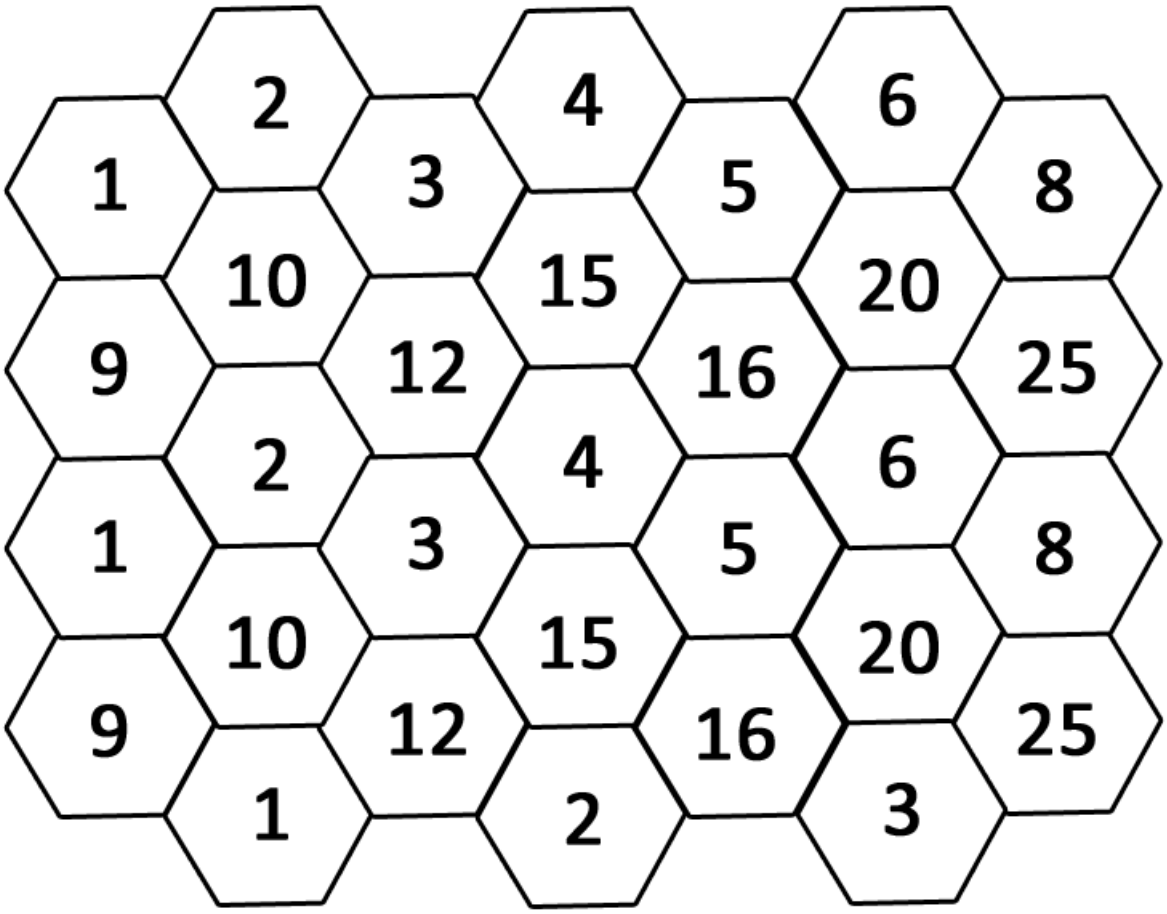
1	2	3	4	5	6	7	8	9	10



1	2	3	4	5	6	7	8	9	10

Product Lines 1-5

1	2	3	4	5



1	2	3	4	5