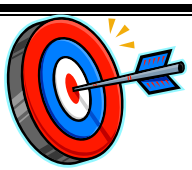
Math Collaborative Planning Guide

Unit/Problem:

The Learning Target:



How does the learning target fit into the overall goal of the unit?

Connections to prior CMP units:

Key Vocabulary

What previous vocabulary do we need to review?
What new mathematical vocabulary will come out of the lesson?
Is there any non-mathematical vocabulary that needs to be discussed before the lesson? (like "compost box")

Materials/Manipulatives

List the obvious things like rulers, calculators, red & black chips, dice, etc.
Challenge yourselves to also think beyond the obvious… wikki stix, colored tiles, virtual manipulatives, etc.

Launch

Set the students on their journey.
What introductory information is needed for the problem? Is there an opportunity to make predictions?
How can you also use the launch to get students personally invested in the problem?
The launch should generally take around 5 to 10 minutes.

Explore

Students will work: ☐individually ☐ in pairs ☐ in groups of ____

What should you look for as you move around the room from group to group?
What are the potential problems that will arise while students are exploring the mathematics?
What questions will you ask to help students if these problems arise? How will you scaffold?

Potential Student Problems	Teacher Scaffolding Questions

Summarize

How will the students participate in the summary?
What are the main ideas you need to pull out of the lesson?
How will students record the main ideas? (foldable, highlight portions of the labsheet, write in their spiral, graphic organizer…)
What questions can be asked during the Summary to extend learning?

- Looking for patterns
- Connecting various solution strategies (Example for similarity: Janet used ratios and Leisa used the scale factor, so how do both of these strategies give you the same missing measurement?)
- Asking "What if?"
- Making predictions or evaluating an earlier hypothesis

For some lessons it is also important to spend time during the summary evaluating why a particular strategy DOESN'T work. If this is one of those lessons, what incorrect strategy do you need to visit with the class?

Higher Level Questions

What questions can we ask (during any part of the lesson) to promote higher level thinking for **all** students?

What high level questions can be asked during the Explore to check for true understanding? (EX: If you subtract a negative, will the answer get smaller, larger, or does it depend? Why?)

In addition… What questions/problems could be provided to extend the learning for students or groups of students who grasp the concept early and are capable of going further with the mathematics?

ELL/SpEd Considerations

Are there pictures we can use to help with new vocabulary?
Is there any extraneous information we can leave off of the labsheets?
Is there enough white space on the paper so students aren't overwhelmed?
Can we provide a table, fill in the scales on the axes…? (as long as that isn't a goal of the lesson)
Are their cultural references in the problem that need to be clarified?

Formative Assessment

- Exit cards (make one question skill level and a second question that requires explanation)
- Thumbs up / thumbs down (How confident are you in your ability to use the Pythagorean Theorem?)
- White boards (write an equation with a slope of 2)
- Wikki Stixs (create an obtuse angle; show me an approximate graph of the parabola for $y = -2x^2 + 3$)
- Graphic organizer (fill in the web with at least 5 things you know about linear relationships)
- One sentence summary (write one sentence about what you learned today)
- Muddiest Point (ask students to tell you one thing they are still unclear about)
- Examples & Non-examples (give me two examples figures you can use V = Bh to find the volume of and two examples of figures where V=Bh would not work)

CONNECT IT BACK TO THE LEARNING TARGET

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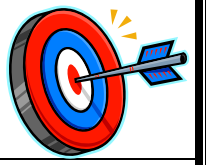

How does the learning target fit into the overall goal of the unit?

Connections to prior CMP units:

Key Vocabulary	**Materials/Manipulatives** 

Launch

Explore

Students will work: ☐ individually ☐ in pairs ☐ in groups of _____

Potential Student Problems	Teacher Scaffolding Questions

Summarize

Higher Level Questions

ELL/SpEd Considerations

Formative Assessment