+Example of Strategies to Assess

Example of strategies to assess student understanding

Remember, when you're examining student work, ask yourself these questions:

- What does this student understand already?
- Where do there seem to be misconceptions or gaps?
- What other information do I require? Do I need to ask for something more?
- What are my next steps?

Open-ended Problems

Open-ended problems can allow students to choose a suitable level of difficulty. Let your students know that they do not have to solve certain problems in certain ways, but rather can choose a strategy that works best for them in a given situation.

Here is an example for you to try:

Grade 4, Number, Outcome 6:
Demonstrate an understanding of multiplication (2- or 3-digit by 1-digit) to solve problems by... [C, CN, ME, PS, R, V]

3 5 7 19 26 325

Choose one of these numbers and one of these numbers.

Create and solve a multiplication story using your two numbers. Use numbers, words, and/or drawings to make your strategy clear.

This example is easily adapted for other levels. For example:

Grade 1, Number, Outcome 9:
Demonstrate an understanding of addition of numbers with answers to 20 and their corresponding subtraction facts, concretely, pictorially and symbolically, by...
[C, CN, ME, PS, R, V]

12 15 20 9 7 6

Choose one of these numbers and one of these numbers.

Create and solve a subtraction story using your two numbers. Use numbers, words, and/or drawings to make your strategy clear.

Another example, this time for Grade 6:

Grade 6, Number, Outcome 8:
Demonstrate an understanding of multiplication and division of decimals (1-digit whole number multipliers and 1-digit natural number divisors).
[C, CN, ME, PS, T]

1.2 15.6 4.37 9 7 6

Choose one of these numbers and one of these numbers.

Create and solve a multiplication story using your two numbers. Use numbers, words, and/or drawings to make your strategy clear.

Formative assessment technique: Make learning visible with mini whiteboards
An activity for Kindergarten or Grade 1 students

Kindergarten, N4
Represent and describe numbers 2 to 10, concretely and pictorially.
[C, CN, ME, R, V]

Grade 1, N4
Represent and describe numbers to 20 concretely, pictorially and symbolically.
[C,CN,V]

Do students understand that numbers can be broken into parts and combined in a variety of ways without changing the total?

- Give each student a mini whiteboard or all-response board to record their thinking.
- Pose the following question to the students: You have (6 or 16) snap cubes. Some snap cubes are blue and some are red. How many of the cubes are red and how many of the cubes are blue? Record your answer on your whiteboard.
- Have students pair and share with a partner. Ask, "Did you and your partner have the answer?" "If not, which answer is correct and why?"
    - Watch to see if students are able to find a pair of number that add to make 16. Listen to their explanation as to why the answers might be different but still be correct. Watch for students who need to draw to come up with the solution or need to use manipulatives. What might this tell you about their understanding?
- Record the various responses from the students on the board. Ask, "Do we have all the possible answers to this question? How might we know this?"
    - Listen to student responses to see if they know that there are several ways to join two colors to make (6 or 16).
    - Listen to responses on how they know if we have them all.
    - What do these responses reveal about student understanding?
- Exit slip question: Choose a different number between (5 and 10, or 10 and 20) and show how you might represent this number in at least 2 different ways.

Source : www.pixabay.com (public domain)

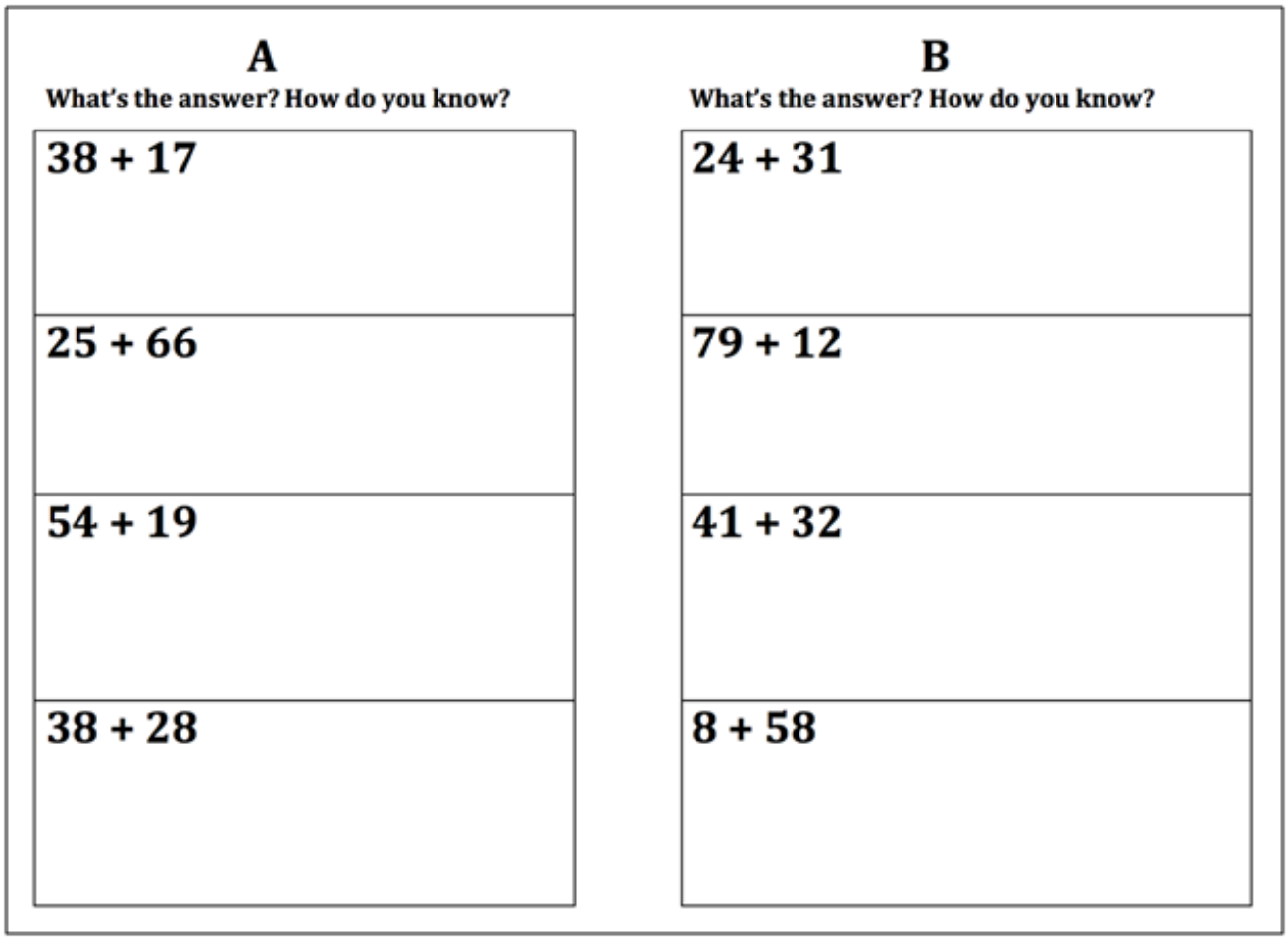
Row Games

A row game is an engaging way to activate students as resources for one another. You prepare a row game by creating two sets of problems. Although the problems are different, each pair of problems has the same solution.

- You easily differentiate for students at different levels by making one set of problems a little more challenging than the other.
- Make it your expectation that, as students compare answers, they will describe how they reached their solution.
- When the answers don't match, students pause to examine each problem and work together to correct errors.

Here is an example.

You can download this example by clicking here.



A What's the answer? How do you know?	B What's the answer? How do you know?
38 + 17	24 + 31
25 + 66	79 + 12
54 + 19	41 + 32
38 + 28	8 + 58

NOTE: Put the responsibility for assessment in the hands of your students!

This technique (having students work with a partner to verify solutions) works very well with almost any type of practice activity in math. Rather than have students complete multiple problems to hand in for marking, have them check each problem as they complete it with a partner. Where the answers match, students mark them as correct. When they do not match, students work together to find the error and correct it. The feedback is immediate, and the ones doing the thinking are the students.

Exit Passes

Exit passes provide another opportunity to gather on-going evidence of learning. They can be used anytime during a class, and should be designed so you can quickly see who is on track, almost there, or experiencing difficulties. Then you use that information to make instructional decisions.

As you examine the exit passes, ask yourself these questions:

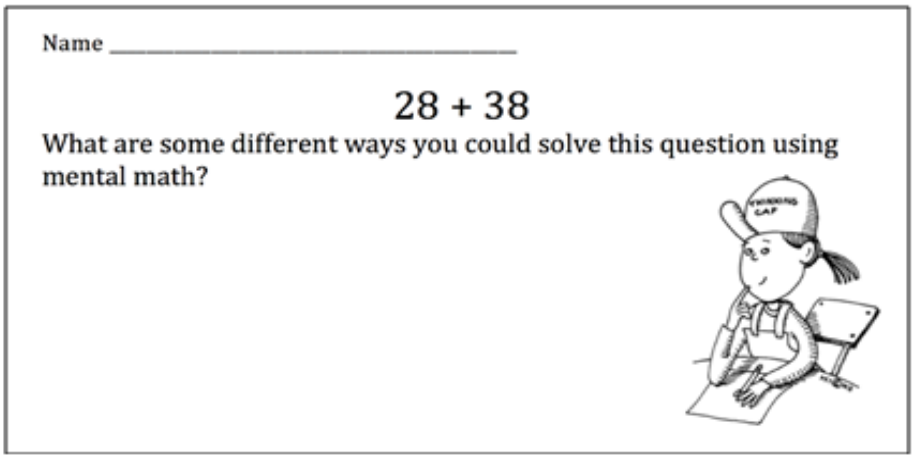
- What evidence of learning do you see?
- What is this student doing well?
- Where are the problems or misconceptions?
- What would your next steps be?

The exit slip may allow you to group students for the next lesson, decide on a mini-lesson for certain students, or reteach a concept for the entire class.

Mental Math Exit Pass

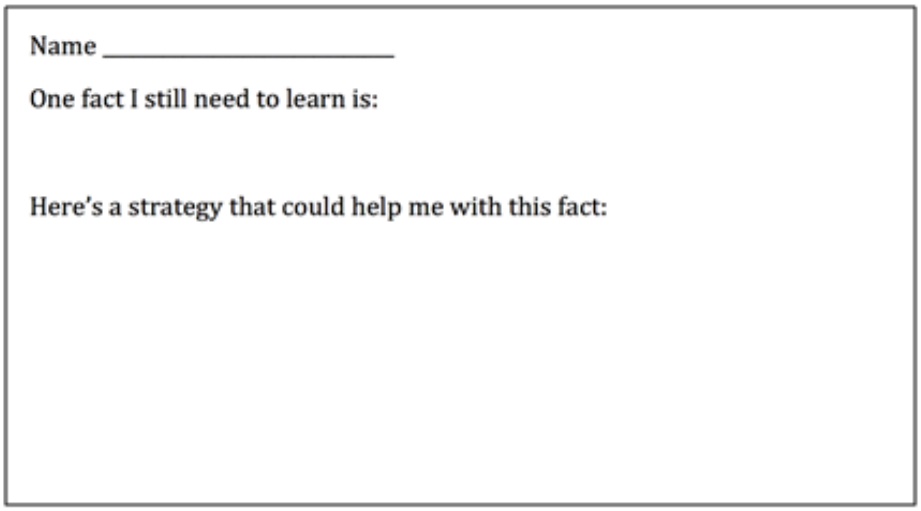
Explicit mental math outcomes appear at most elementary grades: Grade 1, N10; Grade 2, N10; Grade 3, N6, N7 and N10; Grade 4, N5; Grade 5, N3 and N4.

Try an exit pass with one calculation, appropriate for mental math at your grade level, and ask the students to describe one or more strategies for finding the solution. Consider including visual representations, such as an array or ten frames, for support.


Name _____

28 + 38

What are some different ways you could solve this question using mental math?


Name _____

One fact I still need to learn is:

Here's a strategy that could help me with this fact:

Other Exit Passes to Try…

Outcome: Kindergarten, N4 – Represent and describe numbers 2 to 10, concretely and pictorially. [C, CN, ME, R, V] **or** Grade 1 N4 – Represent and describe numbers to 20 concretely, pictorially and symbolically. [C,CN,V] **Exit slip question: Draw 8 dots to make it easy to see that 8 is more than 5. Try to show this in more than 1 way.**
Outcome: Grade 2 N 9 –Demonstrate an understanding of addition (limited to 1 and 2-digit numerals) with answers to 100 … [C,CN,ME,PS,R,V] **Exit slip question: Arlene solved the problem 59 + 28 = ? by using 60 + 27. Is this a good strategy? Explain your thinking.**
Outcome: Grade 3 N 2 - Represent and describe numbers to 1000 concretely, pictorially and symbolically. [C,CN,V] **Exit slip question: Choose 15 base ten blocks and use them to make a number that is less than 1000. What might the number be? What base ten blocks did you use? Draw them.**
Outcome: Grade 4 N6 - Demonstrate an understanding of multiplication (2 or 3 digit by 1 digit) to solve problems by . . . [C, CN,ME, PS, R, V] **Exit slip question: I solved a problem by multiplying 3 x 24. What might my problem be? Solve the problem.**
Outcome: Grade 5 N4 – Apply mental math strategies for multiplication such as . . . [C, CN,ME, R, V] **Exit slip question: Jeremy solved 45 x 12 by multiplying 90 x 6 to get an answer of 540. Can you explain why this works?**
Outcome: Grade 6 N8: Demonstrate an understanding of multiplication and division of decimals. [C, CN,ME, R, V] **Exit slip question: How are multiplying decimal numbers and multiplying whole numbers alike? Use an example in your explanation.**

Performance Assessment

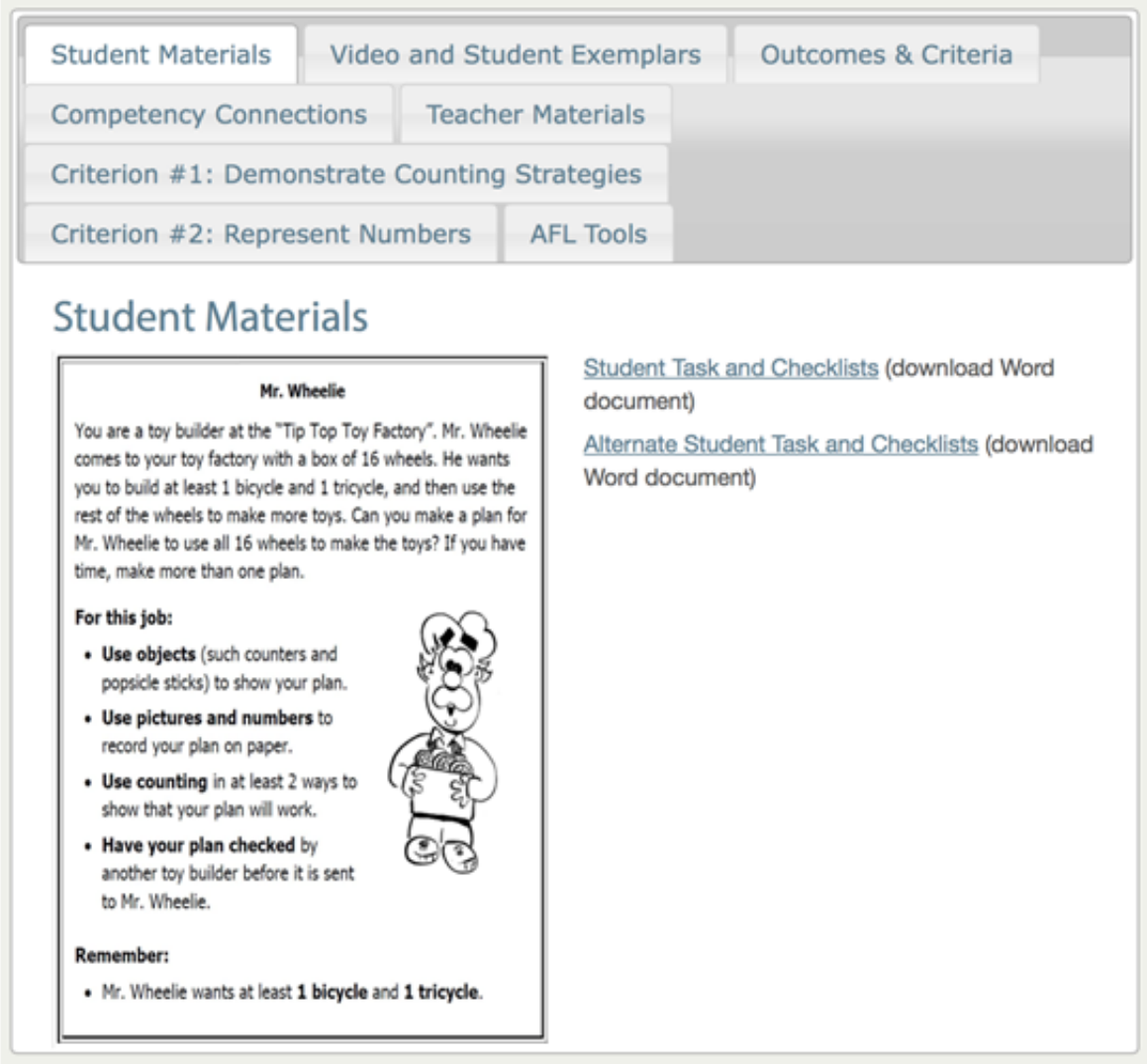
- "… a meaningful, real-life task that enables students to demonstrate what they know and can do in situations like those they will encounter outside the classroom as well as in situations that simulate how people do their work."

(Assessment Glossary, Alberta Assessment Consortium, updated 2016)

The Alberta Assessment Consortia website (aac.ab.ca) has a library of performance assessments. While some of the resources are available to member jurisdictions only, there are three elementary mathematics performance assessments (one each for grades 1, 3 and 6) in open space. These assessments include student tasks, outcome correlations, rubrics, tools for peer coaching and self-reflection, videos and suggestions for instruction. Because the task materials can be downloaded as Microsoft Word documents, they can act as useful templates for teacher-created performance tasks.

Grade 1: Mr. Wheelie

http://www.aac.ab.ca/assessment-materials/mr-wheelie/



Grade 3: The T-Shirt Order
http://www.aac.ab.ca/assessment-materials/the-t-shirt-order/

Student Materials | Video and Student Exemplars | Outcomes & Criteria
Competency Connections | Teacher Materials
Criterion #1 and #2: Collect/Organize/Interpret Data
Criterion #3: Use Strategies | AFL Tools | Combined Classroom Notes

Student Materials

The T-Shirt Order

You and your classmates have just received brand new school t-shirts. Now you've decided to raise money so you can get your names printed on the back of your shirts. The cost of printing each name depends on how long the name is. There are 3 different prices:

Number of Letters	Cost
Up to 4 letters	$2
5 or 6 letters	$3
7 or more letters	$5

Your job is to find out how many names fit into each category, and how much it will cost to print all the names on t-shirts.

For this activity:

- **Organize the data** from the class list using tally marks, a line plot, a chart or a list.
- **Use the data** to solve a problem.
- **Describe your strategy** for adding the numbers.

Student Task, Worksheet and Rubric (download Word document)

Combined 2/3 and 3/4 Classrooms

The following versions of this task, along with Task Specific Outcome/Criteria Correlations, are adapted for Grade 2 and Grade 4 students.

Grade 2 Student Task, Worksheet and Rubric (download Word document)

Grade 2 Task Specific Outcome/Criteria Correlation (download Word document)

Grade 2 Task Specific Outcome/Criteria Correlation (view PDF document)

Grade 4 Student Task and Rubric (download Word document)

Grade 4 Task Specific Outcome/Criteria Correlation (download Word document)

Grade 4 Task Specific Outcome/Criteria Correlation (view PDF document)

Grade 6: The Frozen Yogurt Sale
http://www.aac.ab.ca/assessment-materials/the-frozen-yogurt-sale/