Measurement – Pre and Post Assessment Questions Bank

The measurement questions/activities in this file may assist classroom teachers in determining student understanding and instructional “next steps” (entry and exit) related to the measurement strand addressed in grades K-6, Ontario Curriculum Grades 1-8, Mathematics.

Questions have been constructed to assess students’ understanding of concepts; as well, mathematical process expectations. These process expectations are embedded in the achievement chart. Each of the process expectations are addressed at the beginning of each grade level in the Ontario Curriculum Grades 1-8, Mathematics.

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<th>Knowledge and Understanding</th>
<th>Thinking</th>
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<td></td>
<td>Problem Solving</td>
<td>Selecting Tools and Computational Strategies</td>
<td>Communicating</td>
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<td></td>
<td>develop, select, and apply problem-solving strategies as students pose and solve problems and conduct investigations, to help deepen their mathematical understanding;</td>
<td>Select and use a variety of concrete, visual, and electronic learning tools and appropriate computational strategies to investigate mathematical ideas and to solve problems;</td>
<td>Communicate mathematical thinking orally, visually, and in writing, using everyday language, as well as mathematical vocabulary, and a variety of representations, and observing basic mathematical conventions.</td>
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<td>Reflecting demonstrate that students are reflecting on and monitoring their thinking to help clarify their understandings as they complete an investigation or solve a problem;</td>
<td>Connecting Make connections among mathematical concepts and procedures, and relate mathematical ideas to situations or phenomena drawn from other contexts;</td>
<td>Representing Create a variety of representations of mathematical ideas (example: using physical models, pictures, numbers, variables, diagrams, graphs, onscreen dynamic presentations) make connections among them, and apply them to solve problems;</td>
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<td>Reasoning and Proving develop and apply reasoning skills to make and investigate conjectures and construct and defend arguments;</td>
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Classroom teachers may select questions related to the measurement concepts and Big Ideas, to assist in diagnostic, formative and summative assessment. These questions are not meant to replace assessment tasks related to the measurement unit activities in the
primary math resource, Math Makes Sense; rather, these questions may provide additional information to classroom teachers in assessment of and for learning.

Each grade level bank consists of questions addressing specific expectations in measurement with classification of mathematical processes involved. In many cases, a question can belong to more than one process.

Classroom teachers may choose to use some or all of the questions for their grade level, depending on the overall expectations that will be addressed in a particular unit. The same questions can be used as pre and post assessment questions, with the understanding that these questions will not be “taken up” or reviewed with students during the course of instruction.

Instructions for copying questions from the grade level question bank (PDF files) to Word Perfect are enclosed in this folder.

Special thanks and acknowledgement is extended to the staff of Coe Hill Public School, for initiating this project as well as contributing questions and activities for the grade level assessments.

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HPEDSB                  HPEDSB
Measurement Grade 2 – Pre and Post Assessment

Manipulatives may be used for any of these assessment questions. Paper clips and triangle pattern blocks (green) will be required for some questions.

Overall Expectations

Estimate, measure, and record length, perimeter, area, mass capacity, time and temperature, using non-standard units and standard units

Compare, describe, and order objects, using attributes measured in non-standard units and standard units

Attributes, Units and Measurement Sense

2m30 choose benchmarks- in this case, personal referents-for a centimeter and a metre to help perform measurement tasks;
2m31 estimate and measure length, height, and distance, using standard units and non-standard units;
2m32 record and represent measurements of length, height, and distance in a variety of ways;
2m33 select and justify the choice of a standard units or a nonstandard unit to measure length;
2m34 estimate, measure, and record the distance around objects, using non-standard units;
2m35 estimate, measure, and record area, through investigation using a variety of non-standard units;
2m36 estimate, measure, and record the capacity and/or mass of an object, using a variety of non-standard units;
2m37 tell and write time to the quarter-hour, using demonstration digital and analogue clocks;
2m38 construct tools for measuring time intervals in non-standard units;
2m39 describe how changes in temperature affect everyday experiences;
2m40 use a standard thermometer to determine whether temperature is rising or falling;

Measurement Relationships

2m41 describe, through investigation, the relationship between the size of a unit of area and the number of units needed to cover a surface
2m42 compare and order a collection of objects by mass and/or capacity, using non-standard units
2m43 determine, through investigation, the relationship between days and weeks and between months and years.
2m30 choose benchmarks- in this case, personal referents-for a centimeter and a metre to help perform measurement tasks; *(Reasoning)*

1. What would you use to measure the length of your reading book?
   
   Your finger  
   or  
   Your foot

   Explain why

2m31 estimate and measure length, height, and distance, using standard units and non-standard units; *(Knowing Facts and Procedures)*

2. When measuring with paper clips, how long is each of the objects below?

   ![Object 1](image1.png)  
   ![Object 2](image2.png)  
   ![Object 3](image3.png)

   It is _____ paper clips long.  
   It is _____ paper clips long.

   It is _____ paper clips long.
2m32 record and represent measurements of length, height, and distance in a variety of ways; (Reasoning)

3. Would you measure the following objects using centimetres or metres? Circle the measurement you would use.

   centimetres or metres
   centimetres or metres
   centimetres or metres

2m33 select and justify the choice of a standard units or a nonstandard unit to measure length; (communication).

4. If you are asked to measure how far it is from one basketball net to the other on the school yard, what would you use? Explain how you know.

   A ruler or A meter stick

5. If you are asked to measure how far it is from one side of your desk to the other, what would you use? Explain how you know.

   A ruler or A meter stick
2m34 estimate, measure, and record the distance around objects, using non-standard units; *(Knowing Facts and Procedures)*

6. Using paper clips, measure the distance around this page.
   __________ paperclips

7. Using paper clips, measure the distance around your desk.
   __________ paperclips

2m35 estimate, measure, and record area, through investigation using a variety of non-standard units *(Knowing facts and procedures)*

8. Estimate how many buttons would fit in the box.

I estimate __________ buttons will fit in the box.

9. Estimate how many buttons will cover this page.

I estimate __________ buttons will cover this page.
2m36 estimate, measure, and record the capacity and/or mass of an object, using a variety of non-standard units; (*Knowing facts and procedures*)

10. Circle which object is heavier in each of the pictures.

11. Draw the hands

12. Write the time two different ways.

Tell and write the time to the quarter-hour, using demonstration digital and analogue clocks (*Knowing Facts and Procedures*)
Construct tools for measuring time-intervals in non-standard units *(Reasoning)*

13. If today is Wednesday, how many more sleeps until Saturday?

14. How many hand claps would it take for your friend to tie their shoes?

Describe how changes in temperature affect everyday experiences *(Making Connections)*

15.

Print the time of year when each of these usually happens:
Use a standard thermometer to determine whether temperature is rising or falling. 

*(Thinking/Communication)*

16. When the temperature is __________, I like to __________.

Record the temperature. Draw or write what you like to do at this temperature.

17. When the temperature is __________, I like to __________.

Record the temperature. Draw or write what you like to do at this temperature.

Describe through investigation, the relationship between the size of a unit or area and the number to cover a surface *(Making Connections)*

How many triangles will cover each shape? (Use the green pattern block.)

18. __________

19. __________
Compare and order a collection of objects by mass and/or capacity using non-standard units (Reasoning)

Print the words heavier and lighter where they belong.

20.

Determine through investigation, the relationship between days and weeks (Knowing facts and procedures)

22. What day is 2 days after Tuesday? ______________________________

23. What day is 5 days after Friday? ________________________________

24. Two weeks is the same as how many days? ________________________
ANSWERS

1. Use your finger because it is smaller than the book. Your foot might be smaller than the book, but it will be hard to guess parts of your foot length.

2. Crayon: 3 clips; Brush: 6 clips; Stapler: 5 clips (plus a little)

3. Safety Pin & shoe = cm; Door & bus = m

4. Use a meter stick because the distance is going to be several meters. With a ruler, it would be a lot of short measurements and you might lose track.

5. Use a ruler because the desk is fairly short and a meter stick might be too long.

6. Answer will depend on the actual paperclip used.

7. Answer will depend on the actual paperclip used.

8. Estimate needs to be much more than 5 (i.e., 8-10 is likely): an estimate of 5 indicates awareness of the width of the button but with no allowance made for the extra height, whereas a higher estimate as mentioned indicates awareness of the need to cover as much of the space as possible.

9. Estimate needs to be much more than 90 (i.e., 100-110 is likely): an estimate of 8-10 indicates awareness of the width of the button but with no allowance made for the page height, while an estimate of 80-88 indicates an awareness of the need to cover the page without allowance for the spaces between buttons, whereas a higher estimate as mentioned indicates awareness of the need to cover as much of the space as possible.

10. Blocks, shoe, and ball are the heavier objects in all illustrations

11.

12. Left-hand clock: 4:15; Quarter after four; Fifteen (minutes) after four
   Right-hand clock: 10:15; Quarter after ten; Fifteen (minutes) after ten

13. There are three more sleeps: Tonight = #1; Tomorrow (Thursday) night = #2; The next (Friday) night = #3

14. Answers will vary

15. Top row: Fall, Winter, Summer; Bottom row: Winter, Spring, Fall

16. Temp is 30º; I like to swim, play in the sprinkler, hang out where it’s air conditioned

17. Temp is 0º; I like to make snow forts, build snow people, hang out near the fireplace
18. 3 triangles
19. 5 triangles
20. Snowflake lighter; block of ice heavier
21. Shoe heavier; sock lighter
22. Thursday
23. Wednesday
24. 14 days
### Question # | Points to look for – see Answer and Marking Guide for additional detail
---|---
1 | Look for appropriate explanation
2 | Answers: Crayon is 3 clips; brush is 6 clips; stapler is 5 clips
3 | Answers: pin & shoe are cm; bus and door are m; if cm given for door, ask student to justify
4,5 | Answers: #4 is meter stick; #5 is ruler – each needs an appropriate explanation
6,7 | Answer will depend upon the actual size of the paper clip used
8,9 | See teacher edition
10 | Answer: blocks, shoe, ball
11,12 | Answers: Hands drawn 2:15; see teacher edition for alternate answers for #12
13 | Answer: 3; no explanation needed
14 | Answers will vary; likely under 50 claps
15 | Answers - Top row: fall, winter, summer; bottom row: winter, spring, fall (accept “autumn” vice “fall”)  
16,17 | Answers: #16 = 30ºC, activities reflect warm weather; #17 = 0ºC, activities reflect winter weather but not very cold
18,19 | Answers: Left-hand shape 3 triangles, right-hand 5 triangles
20,21 | Answers: Lighter are snowflake and sock, heavier are shoe and ice cube
22,23,24 | Answers: Thursday, Wednesday, 14 days; no explanations needed

<table>
<thead>
<tr>
<th>Question #</th>
<th>Category</th>
<th>Level One</th>
<th>Level Two</th>
<th>Level Three</th>
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<tbody>
<tr>
<td>2, 10, 11, 12, 16, 17, 22, 23, 24</td>
<td>Knowledge and Understanding – The student demonstrates… …of content</td>
<td>limited knowledge/understanding</td>
<td>some knowledge/understanding</td>
<td>considerable knowledge/understanding</td>
<td>thorough knowledge/understanding</td>
</tr>
<tr>
<td>1, 3, 8, 9, 13</td>
<td>Thinking – The student uses planning/critical thinking skills with…</td>
<td>limited effectiveness</td>
<td>some effectiveness</td>
<td>considerable effectiveness</td>
<td>a high degree of effectiveness</td>
</tr>
<tr>
<td>1, 4, 5</td>
<td>Communicating – The student expresses/organizes/communicates/uses conventions and appropriate terminology with…</td>
<td>limited effectiveness</td>
<td>some effectiveness</td>
<td>considerable effectiveness</td>
<td>a high degree of effectiveness</td>
</tr>
<tr>
<td>6, 8, 9, 14, 15, 16, 17, 18, 19</td>
<td>Application – The student applies/transfers knowledge and makes connections with…</td>
<td>limited effectiveness</td>
<td>some effectiveness</td>
<td>considerable effectiveness</td>
<td>a high degree of effectiveness</td>
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