These Questions Can Be Used at Various Times Throughout the Year

This resource comprises five booklets. Each booklet is a compilation of all the questions in a particular strand released between 2012 and 2016. The multiple-choice questions appear first, followed by open-response. The questions are sorted according to the overall expectations in The Ontario Curriculum, Grades 1–8: Mathematics to which each is mapped. Detailed information about the questions, such as the year of release, the overall expectation and the category of knowledge and skills the question is mapped to, is listed after them. This detailed information also includes the answer key for each multiple-choice question. The scoring guides (with the item-specific rubric and student samples at each code) for each open-response question follow.
How to Use This Resource

Overall and specific expectations in the primary- and junior-division mathematics curriculum are organized into the five strands. For the sake of consistency, EQAO has also organized this resource by strand. EQAO reports an overall score for each student but does not provide scores by strand, as there are not a sufficient number of assessment questions mapped to each strand to report accurately at that level. The overall difficulty of all the questions on the assessment remains approximately the same from year to year; however, the overall difficulty of questions by strand may vary from year to year.

Suggested uses of these booklets:

• Select specific questions by overall expectation based on student learning.

• Use the scoring guides for the open-response questions to assist students in evaluating the reasonableness and completeness of their solutions.

• Use multiple-choice questions as open-response questions, when appropriate, by not including the answer options. Students can answer the question and then discuss the steps required and other possible answers, including those arrived at through common errors. Discuss whether there are multiple methods that can be used to answer the question. Students can then compare their answer to the multiple-choice options. Encourage the students to identify ways to ensure their solution process is complete and the question is answered fully.

• Use technology in the classroom to have students record multiple-choice answers instantly, which will allow for discussion of correct answers and the common errors demonstrated by the incorrect options (along with other errors not included in these options). This discussion can lead to a deeper understanding of concepts and assist students in correcting their own misunderstandings. Another option is to have students start with the correct answer and work backward to formulate a question.

• Encourage students to use manipulatives, and model how to apply them. For example, number lines can be used with questions mapped to expectations in the Number Sense and Numeration strand as well as those mapped to other strands, such as Patterning and Algebra or Data Management and Probability.

Details of the Assessment

EQAO assessments are comparable from year to year, as they share a common structure. The blueprint, which can be found in the Framework, defines how the questions are spread throughout the curriculum. (For more information, see www.eqao.com.) EQAO releases only half of the assessment each year (and has done so since 2013), so the released questions from a particular year do not cover the full blueprint. The blueprint specifies the number and types of questions (multiple-choice or open-response) that are mapped to a particular group of expectations. Each group of expectations can consist of one or more overall expectations, which themselves include specific expectations. Although EQAO releases only the overall expectation, each question is mapped to a specific expectation. The specific expectations vary from year to year; however, some of them involve knowledge or skills that may be assessed every year, or different parts of the expectation can be assessed on a yearly basis.
How to Use This Resource (continued)

When specific expectations are repeated, the categories of knowledge and skills the questions are mapped to can change. In the blueprint, some expectations and parts of others are set in italics, which indicates that the italicized element cannot be assessed on a large-scale assessment. EQAO’s aim is for each specific expectation (excluding the ones set completely in italics) to have at least one question mapped to it every five years.

Each question is also mapped to a category of knowledge and skills. EQAO maps multiple-choice questions to the Knowledge and Understanding, Application and Thinking categories. Open-response questions are mapped to either Application or Thinking. EQAO does not map any questions to the category Communication, but teachers can evaluate this skill through any open-response questions where students need to show their work or justify their answer.

There are multiple-choice questions on the primary-division assessment that do not permit students to use a calculator or manipulatives when answering them. These questions are mapped only to certain expectations in the Number Sense and Numeration and the Patterning and Algebra strands and can be found at the beginning of these booklets.

EQAO’s Definitions of the Categories of Knowledge and Skills

EQAO has adapted the definitions of the categories of knowledge and skills from the achievement chart found in The Ontario Curriculum. These definitions assist EQAO in mapping questions.

A question is mapped to the category of Knowledge and Understanding if students must demonstrate only subject-specific content (knowledge) or comprehension of its meaning and significance (understanding), or both, in order to answer the question. These questions assess basic knowledge or understanding of concepts.

A question is mapped to the category Application if students must select the appropriate tool or get the necessary information and “fit” it to the problem. A question may change from Knowledge and Understanding to Application if context is added.

Questions that require students either to select and sequence a variety of tools or to demonstrate a critical thinking process (e.g., reasoning) are mapped to the category Thinking. Consider whether students need to make a plan to answer the question. Thinking questions require students to select more than one tool and sequence them (e.g., add first then subtract) or use reasoning to determine the answer. There may be more than one way to answer these questions.

Questions where students need to select one tool and use it repeatedly (without any sequencing of tools) are usually mapped to the category Application. However, the selection of a tool, its use more than once and the addition or subtraction of the results requires a plan.

Questions requiring such a plan are generally mapped to the category Thinking.

The category and specific expectation each question is mapped to is confirmed by many Ontario educators, including the question writer, review committees and an expert reviewer. In the classroom, these questions can be mapped to a category based on the knowledge and skills the students currently have. If students have never been taught a specific skill, the question could be mapped to Application or even Thinking; however, after they are taught the skill, it could be mapped to Knowledge and Understanding or Application.

As the EQAO assessment is written near the end of the school year, it assumes that students have been taught the knowledge and skills outlined in the curriculum for the year.
Here are some examples to help distinguish the different categories of knowledge and skills questions are mapped to.

Example 1:
When two multiple-choice questions are similar, the answer options can influence the category of knowledge and skills the question is mapped to.

<table>
<thead>
<tr>
<th>VERSION 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is 79 + 22?</td>
</tr>
<tr>
<td>a 91</td>
</tr>
<tr>
<td>b 101</td>
</tr>
<tr>
<td>c 191</td>
</tr>
<tr>
<td>d 911</td>
</tr>
</tbody>
</table>

(continued)

<table>
<thead>
<tr>
<th>VERSION 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students need simply to answer the question to determine which option is correct. They do not have to select a tool, as the tool (+) is provided. The options are the correct answer and other plausible common adding errors. The category that this question is mapped to is Knowledge and Understanding.</td>
</tr>
<tr>
<td>(correct answer: b)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VERSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which of these expressions represents the answer to 79 + 22?</td>
</tr>
<tr>
<td>a 70 + 20 + 11</td>
</tr>
<tr>
<td>b 70 + 20 + 1</td>
</tr>
<tr>
<td>c 90 + 2</td>
</tr>
<tr>
<td>d 90 + 7</td>
</tr>
</tbody>
</table>

(continued)

<table>
<thead>
<tr>
<th>VERSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>For version 2, the answer options have changed the category, as students need to consider the expressions and determine which one represents the same value. They may determine that 79 is 70 + 9 and that 22 is 20 + 2 and then determine that 9 + 2 is 11. This question is mapped to the category Application based on the options provided.</td>
</tr>
<tr>
<td>(correct answer: a)</td>
</tr>
</tbody>
</table>

Example 2:
When the answer options are similar, the question can be changed to influence the category of knowledge and skills.

<table>
<thead>
<tr>
<th>VERSION 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which number pattern shows adding 5 each time?</td>
</tr>
<tr>
<td>a 9, 14, 19, 24, 29,…</td>
</tr>
<tr>
<td>b 9, 13, 17, 21, 25,…</td>
</tr>
<tr>
<td>c 37, 32, 27, 22, 17,…</td>
</tr>
<tr>
<td>d 37, 33, 29, 25, 21,…</td>
</tr>
</tbody>
</table>

(continued)

<table>
<thead>
<tr>
<th>VERSION 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version 1 is mapped to the category Knowledge and Understanding. Students need to look at the options and determine if the numbers are increasing by 5 each time. They are provided the tool (adding 5 each time). Students are also given the number patterns.</td>
</tr>
<tr>
<td>(correct answer: a)</td>
</tr>
</tbody>
</table>
Example 2 (continued)

VERSION 2a

Three numbers are missing in this pattern. The pattern is increasing by the same amount each time. What are the three missing numbers?

9, 14, 19, __, __, __, 39

a 20, 21, 22
b 24, 34, 44
c 24, 29, 34
d 29, 39, 49

VERSION 2b

This pattern is increasing by the same amount each time.

19, 24, 29, 34, 39,…

What are the next two terms of this pattern?

a 41, 43
b 44, 49
c 44, 54
d 49, 59

VERSION 3

Ivy writes the first five numbers of her pattern:

25, 27, 29, 31, 33,…

Her pattern continues to increase by the same amount each time.

Corey writes the first five numbers of his pattern:

1, 8, 15, 22, 29,…

His pattern continues to increase by the same amount each time.

What number is in both of their patterns?

a 35
b 36
c 37
d 43

VERSION 2a and 2b

Versions 2a and 2b are mapped to the category Application. In both versions, the pattern rule is not given, and students are required to determine the amount by which the pattern is increasing. Students can determine the missing numbers and then find them in the options, or they can try each option and see which one works in the pattern.

(correct answer for version 2a: c)
(correct answer for version 2b: b)

VERSION 3

This version requires a plan. Students must first determine the amount each pattern is increasing by and then extend the pattern using the appropriate pattern rule. After, the student must identify a number common to both patterns. If there is no common number, they will need to extend one or both patterns further. This question is mapped to the category Thinking.

(correct answer: d)
Example 3:

Multiple-choice and open-response questions can be mapped to the category of **Thinking**.

**VERSION 1**

This multiple-choice question is mapped to the category **Thinking**. Students need to make a plan or use reasoning to answer this multiple-choice question. They need to determine how the shape can be used to cover the grid. They can draw the shape onto the grid or count the number of squares and determine the number of groups of 3 in the total.

(correct answer: b)

**VERSION 2**

This open-response question is also mapped to the category **Thinking**. Students need to make a plan. They need to determine the area of each playground and then determine the difference between the two. Students can also cross off one block in each playground at a time and determine the number of blocks left over (not crossed out) on Playground A. Work must be shown to demonstrate how the student determined the answer.

Refer to question 26 in the Measurement strand booklet for samples of student responses with annotations.
INSTRUCTIONS

Answering Multiple-Choice Questions

Like this: ● Not like this: ☒ ☐ ☑ ●

• Use a pencil only.
• Fill only one circle for each question.
• Fill the circle completely.
• Cleanly erase any answer you wish to change.

Answering Open-Response Questions

• Write on the space provided in this booklet.
You may use a calculator and/or manipulatives.
1. Which shape has angles that are all smaller than a right angle?

2. Which shape below has both
   - at least one right angle and
   - angles that are greater than a right angle?
3 Look at the figures below.

Which figures have exactly 5 faces?
- triangular prism and cube
- rectangular prism and cube
- triangular prism and square-based pyramid
- rectangular prism and square-based pyramid

4 Marissa uses 5 pattern blocks to cover the shape below, with no gaps or overlaps.

Which 5 pattern blocks could she use?
- 2 hexagons and 3 triangles
- 4 trapezoids and 1 triangle
- 1 hexagon, 1 trapezoid and 3 triangles
- 1 hexagon, 2 trapezoids and 2 triangles
5. Which of the following shapes is a parallelogram?

- △
- □
- ●
- ○

6. Which of the figures pictured below is a square-based pyramid?

- ▲
- △
- ●
- ○
7. Which figure is a pentagonal pyramid?

8. Mike has a 3-D figure. It has 5 faces and 5 vertices. Which figure does Mike have?

- triangular prism
- rectangular prism
- square-based pyramid
- triangular-based pyramid

9. Four shapes are shown on the grid below.

Which two shapes appear to be congruent?

- N and P
- P and W
- W and X
- X and N
10 Transformations move the shape in Box A to Box B, to Box C and then to Box D.

What are the transformations in order?
- translation, reflection, rotation
- translation, rotation, reflection
- rotation, reflection, translation
- rotation, translation, reflection

11 Transformations move the shape in Box 1 to Box 2 and then to Box 3.

What are the transformations in order?
- reflection and translation
- reflection and rotation
- rotation and translation
- rotation and reflection
12. Which shows a transformation that matches its title?

- Translation
- Rotation
- Reflection
The table below shows 3 shapes and information about their angles.

<table>
<thead>
<tr>
<th>Shape</th>
<th>Number of right angles</th>
<th>Number of angles larger than a right angle</th>
<th>Number of angles smaller than a right angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shape A</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Shape B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shape C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shape D</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Complete the table for Shape B and Shape C.

Which of the following shapes could be Shape D?

Circle one:

Justify your answer.
14 In the chart below, draw a pattern block that matches the title of the column.

<table>
<thead>
<tr>
<th>Has an angle bigger than a right angle</th>
<th>Has an angle smaller than a right angle</th>
<th>Has an angle equal to a right angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark the angle with an X.</td>
<td>Mark the angle with an X.</td>
<td>Mark the angle with an X.</td>
</tr>
</tbody>
</table>
15 A path from D to E is drawn on the grid below.

Describe this path.

Draw the shortest path along the grid lines from E to F.
Describe this path.
16 Draw the **shortest** path from the school to the park and the **shortest** path from the school to the store on these grid lines.

Describe both paths.

**School to the park**

________________________________________________________________
________________________________________________________________
________________________________________________________________

**School to the store**

________________________________________________________________
________________________________________________________________
________________________________________________________________
17 Complete the shape on the grid. Use the dotted line as a line of symmetry.

Draw all lines of symmetry on the shape.
Explain why these lines are lines of symmetry.
18 Draw all lines of symmetry for each letter below.

A
H
T
Z

Explain how you know that the letter A shown above has a line of symmetry.
## Detailed Information About the Questions

### Geometry and Spatial Sense

#### Multiple-Choice Questions

<table>
<thead>
<tr>
<th>QUESTION NUMBER</th>
<th>YEAR QUESTION RELEASED</th>
<th>OVERALL EXPECTATION*</th>
<th>COGNITIVE SKILL</th>
<th>KEY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2014</td>
<td>1</td>
<td>KU</td>
<td>d</td>
</tr>
<tr>
<td>2</td>
<td>2015</td>
<td>1</td>
<td>AP</td>
<td>d</td>
</tr>
<tr>
<td>3</td>
<td>2012</td>
<td>1</td>
<td>KU</td>
<td>c</td>
</tr>
<tr>
<td>4</td>
<td>2012</td>
<td>2</td>
<td>AP</td>
<td>d</td>
</tr>
<tr>
<td>5</td>
<td>2013</td>
<td>2</td>
<td>KU</td>
<td>b</td>
</tr>
<tr>
<td>6</td>
<td>2015</td>
<td>2</td>
<td>KU</td>
<td>a</td>
</tr>
<tr>
<td>7</td>
<td>2016</td>
<td>2</td>
<td>KU</td>
<td>b</td>
</tr>
<tr>
<td>8</td>
<td>2013</td>
<td>2</td>
<td>AP</td>
<td>c</td>
</tr>
<tr>
<td>9</td>
<td>2012</td>
<td>2</td>
<td>KU</td>
<td>d</td>
</tr>
<tr>
<td>10</td>
<td>2012</td>
<td>3</td>
<td>AP</td>
<td>a</td>
</tr>
<tr>
<td>11</td>
<td>2014</td>
<td>3</td>
<td>AP</td>
<td>d</td>
</tr>
<tr>
<td>12</td>
<td>2016</td>
<td>3</td>
<td>AP</td>
<td>b</td>
</tr>
</tbody>
</table>

#### Open-Response Questions

<table>
<thead>
<tr>
<th>QUESTION NUMBER</th>
<th>YEAR QUESTION RELEASED</th>
<th>OVERALL EXPECTATION*</th>
<th>COGNITIVE SKILL</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>2014</td>
<td>1</td>
<td>TH</td>
</tr>
<tr>
<td>14</td>
<td>2012</td>
<td>1</td>
<td>TH</td>
</tr>
<tr>
<td>15</td>
<td>2012</td>
<td>3</td>
<td>AP</td>
</tr>
<tr>
<td>16</td>
<td>2016</td>
<td>3</td>
<td>TH</td>
</tr>
<tr>
<td>17</td>
<td>2013</td>
<td>3</td>
<td>AP</td>
</tr>
<tr>
<td>18</td>
<td>2015</td>
<td>3</td>
<td>AP</td>
</tr>
</tbody>
</table>

#### Legend

- **KU**: Knowledge and Understanding
- **AP**: Application
- **TH**: Thinking

*This is the number of the overall expectation in the Geometry and Spatial Sense strand that the question is mapped to. The overall expectations are numbered according to the order in which they appear in The Ontario Curriculum.*
Primary Division

Grade 3

Open-Response Questions

Item-specific rubrics and sample student responses with annotations

OPEN-RESPONSE QUESTIONS 13 TO 18
<table>
<thead>
<tr>
<th>Code</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>• Blank: nothing written or drawn in response to the question</td>
</tr>
</tbody>
</table>
| I    | • Illegible: cannot be read; completely crossed out/erased; not written in English  
• Irrelevant content: does not attempt assigned question (e.g., comment on the task, drawings, “?”, “!”; “I don’t know”)  
• Off topic: no relationship of written work to the question |
| 10   | Thinking process to identify angles on shapes as larger than, equal to, or smaller than a right angle shows limited effectiveness due to  
• minimal evidence of a solution process  
• limited identification of important elements of the problem  
• too much emphasis on unimportant elements of the problem  
• no conclusions presented  
• conclusion presented without supporting evidence |
| 20   | Thinking process to identify angles on shapes as larger than, equal to, or smaller than a right angle shows some effectiveness due to  
• an incomplete solution process  
• identification of some of the important elements of the problem  
• some understanding of the relationships between important elements of the problem  
• simple conclusions with little supporting evidence |
| 30   | Thinking process to identify angles on shapes as larger than, equal to, or smaller than a right angle shows considerable effectiveness due to  
• a solution process that is nearly complete  
• identification of most of the important elements of the problem  
• a considerable understanding of the relationships between important elements of the problem  
• appropriate conclusions with supporting evidence |
| 40   | Thinking process to identify angles on shapes as larger than, equal to, or smaller than a right angle shows a high degree of effectiveness due to  
• a complete solution process  
• identification of all important elements of the problem  
• a thorough understanding of the relationships between all of the important elements of the problem  
• appropriate conclusions with thorough and insightful supporting evidence |
The table below shows 3 shapes and information about their angles.

<table>
<thead>
<tr>
<th>Shape</th>
<th>Number of right angles</th>
<th>Number of angles larger than a right angle</th>
<th>Number of angles smaller than a right angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shape A</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Shape B</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Shape C</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Shape D</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Complete the table for Shape B and Shape C.

Which of the following shapes could be Shape D?

Circie one:

Justify your answer. I chose the 3rd shape because it has 2 right angles.

Annotation:
Response demonstrates limited identification of important elements of the problem; incorrectly determines angles for both Shape B and Shape C and incorrectly identifies Shape D.
The table below shows 3 shapes and information about their angles.

<table>
<thead>
<tr>
<th>Shape</th>
<th>Number of right angles</th>
<th>Number of angles larger than a right angle</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Shape A</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Shape B</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Shape C</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Shape D</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Complete the table for Shape B and Shape C.

Which of the following shapes could be Shape D?

Circle one:

Justify your answer. It is the fourth one because D is like this:

Annotation:
Response demonstrates some understanding of the relationships between important elements of the problem; correctly determines angles for Shape B but incorrectly determines angles for Shape C and incorrectly identifies Shape D.
The table below shows 3 shapes and information about their angles.

<table>
<thead>
<tr>
<th>Shape</th>
<th>Number of right angles</th>
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</thead>
<tbody>
<tr>
<td>Shape A</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Shape B</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Shape C</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Shape D</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Complete the table for Shape B and Shape C.

Which of the following shapes could be Shape D?

Circle one:

Justify your answer.

I think that the last shape could be a large right angle, and it has one right angle.

Annotation:
Response demonstrates a considerable understanding of the relationships between important elements of the problem; correctly determines angles for both Shape B and Shape C but incorrectly identifies Shape D.
The table below shows 3 shapes and information about their angles.

<table>
<thead>
<tr>
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<th>Number of right angles</th>
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</thead>
<tbody>
<tr>
<td>Shape A</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Shape B</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Shape C</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Shape D</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Complete the table for Shape B and Shape C.

Which of the following shapes could be Shape D?

Circle one:

Justify your answer.

The first shape has two right angles one larger right angle and one smaller right angle.

**Annotation:**
Response demonstrates a complete solution process; correctly determines angles for both Shape B and Shape C and identifies Shape D.
### Question 14

<table>
<thead>
<tr>
<th>Code</th>
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</tr>
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• minimal evidence of a solution process  
• limited identification of important elements of the problem  
• too much emphasis on unimportant elements of the problem  
• no conclusions presented  
• conclusion presented without supporting evidence |
| 20   | Problem-solving process to compare angles bigger than, smaller than, and equal to a right angle shows some effectiveness due to  
• an incomplete solution process  
• identification of some of the important elements of the problem  
• some understanding of the relationships between important elements of the problem  
• simple conclusions with little supporting evidence |
| 30   | Problem-solving process to compare angles bigger than, smaller than, and equal to a right angle shows considerable effectiveness due to  
• a solution process that is nearly complete  
• identification of most of the important elements of the problem  
• a considerable understanding of the relationships between important elements of the problem  
• appropriate conclusions with supporting evidence |
| 40   | Problem-solving process to compare angles bigger than, smaller than, and equal to a right angle shows a high degree of effectiveness due to  
• a complete solution process  
• identification of all important elements of the problem  
• a thorough understanding of the relationships between all of the important elements of the problem  
• appropriate conclusions with thorough and insightful supporting evidence |
Annotation:
Response demonstrates minimal evidence of a solution process; shows one pattern block that matches the title of the column (trapezoid) but angle which is bigger than a right angle is not indicated.
Question 14

Code 20

In the chart below, draw a pattern block that matches the title of the column.

<table>
<thead>
<tr>
<th>Has an angle bigger than a right angle</th>
<th>Has an angle smaller than a right angle</th>
<th>Has an angle equal to a right angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triangle</td>
<td>Dimond</td>
<td>Rhombus</td>
</tr>
</tbody>
</table>

Mark the angle with an X.

Annotation:
Response demonstrates some understanding of the relationships between important elements of the problem; shows one pattern block that matches the title of the column (Dimond) with required angle clearly indicated.
In the chart below, draw a pattern block that matches the title of the column.

<table>
<thead>
<tr>
<th>Has an angle bigger than a right angle</th>
<th>Has an angle smaller than a right angle</th>
<th>Has an angle equal to a right angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>a rhombus</td>
<td>a trapezoid</td>
<td>a square</td>
</tr>
</tbody>
</table>

Mark the angle with an X.

Mark the angle with an X.

Mark the angle with an X.

Annotation:
Response demonstrates an identification of most of the important elements of the problem; shows three pattern blocks, each matching the title of the column with required angles for two of the pattern blocks (the rhombus and square) clearly indicated (marked angle for trapezoid incorrect).
Question 14

**Code 40**

In the chart below, draw a pattern block that matches the title of the column.

<table>
<thead>
<tr>
<th>Has an angle bigger than a right angle</th>
<th>Has an angle smaller than a right angle</th>
<th>Has an angle equal to a right angle</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Pattern Block 1" /></td>
<td><img src="image2.png" alt="Pattern Block 2" /></td>
<td><img src="image3.png" alt="Pattern Block 3" /></td>
</tr>
</tbody>
</table>

*Mark the angle with an X.*

**Annotation:**
Response demonstrates a complete solution process; shows three pattern blocks each matching the title of the column with required angles clearly indicated.
### Question 15

<table>
<thead>
<tr>
<th>Code</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>• Blank: nothing written or drawn in response to the question</td>
</tr>
</tbody>
</table>
| I    | • Illegible: cannot be read; completely crossed out/erased; not written in English  
      • Irrelevant content: does not attempt assigned question  
        (e.g., comment on the task, drawings, “?” , “!” , “I don’t know”)  
      • Off topic: no relationship of written work to the question |
| 10   | Application of knowledge and skills to describe and draw paths on a grid shows limited effectiveness due to  
      • misunderstanding of concepts  
      • incorrect selection or misuse of procedures |
| 20   | Application of knowledge and skills to describe and draw paths on a grid shows some effectiveness due to  
      • partial understanding of the concepts  
      • errors and/or omissions in the application of the procedures |
| 30   | Application of knowledge and skills to describe and draw paths on a grid shows considerable effectiveness due to  
      • an understanding of most of the concepts  
      • minor errors and/or omissions in the application of the procedures |
| 40   | Application of knowledge and skills to describe and draw paths on a grid shows a high degree of effectiveness due to  
      • a thorough understanding of the concepts  
      • an accurate application of the procedures (any minor errors and/or omissions do not detract from the demonstration of a thorough understanding) |
Question 15

Code 10

A path from D to E is drawn on the grid below.

Describe this path.

If you walk E all the way to F you won't get a shorter way.

Draw the shortest path along the grid lines from E to F.

Describe this path.

walk East D to E but after you

Annotation:
Response demonstrates a misunderstanding of concepts; description of path from D to E omits direction and number of units, shortest path drawn from E to F (diagonal line also drawn) but description only states walking east with no other direction and no number of units.
**Code 20**

A path from D to E is drawn on the grid below.

![Grid with path from D to E](image)

Describe this path.

1. left
2. down
3. right
4. down

Draw the shortest path along the grid lines from E to F.

Describe this path.

1. left
2. up

**Annotation:**
Response demonstrates errors in the application of the procedures; errors in direction and number of units (2 left instead of 3 right, 3 down instead of 4 down and 1 right instead of 1 left) in description of path from D to E with shortest path drawn from E to F, but errors in direction and number of units (6 left instead of 6 right and 4 up instead of 5 up) in description of path from E to F.
Annotation:
Response demonstrates minor errors in the application of the procedures; units correct but incorrect direction (3 units left instead of 3 units right and 1 unit right instead of 1 unit left) in description of path from D to E, shortest path drawn from E to F with correct units but incorrect direction (6 left instead of 6 right).
Question 15

Code 40

A path from D to E is drawn on the grid below.

Describe this path.

\[ \begin{align*}
3 \text{ right} \\
4 \text{ down} \\
1 \text{ left} \\
4 \text{ down}
\end{align*} \]

Draw the shortest path along the grid lines from E to F.

Describe this path.

\[ \begin{align*}
1 \text{ right} \\
1 \text{ up} \\
1 \text{ right} \\
4 \text{ up} \\
1 \text{ right}
\end{align*} \]

Annotation:
Response demonstrates an accurate application of the procedures; correct description for path from D to E with shortest path drawn and matching description from E to F.
## Question 16

<table>
<thead>
<tr>
<th>Code</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>• Blank: nothing written or drawn in response to the question</td>
</tr>
</tbody>
</table>
| I    | • Illegible: cannot be read; completely crossed out/erased; not written in English  
• Irrelevant content: does not attempt assigned question  
(e.g., comment on the task, drawings, “?”, “!”; “I don’t know”)  
• Off topic: no relationship of written work to the question |
| 10   | Thinking process to draw and describe paths on a grid shows limited effectiveness due to  
• minimal evidence of a solution process  
• limited identification of important elements of the problem  
• too much emphasis on unimportant elements of the problem  
• no conclusions presented  
• conclusion presented without supporting evidence |
| 20   | Thinking process to draw and describe paths on a grid shows some effectiveness due to  
• an incomplete solution process  
• identification of some of the important elements of the problem  
• some understanding of the relationships between important elements of the problem  
• simple conclusions with little supporting evidence |
| 30   | Thinking process to draw and describe paths on a grid shows considerable effectiveness due to  
• a solution process that is nearly complete  
• identification of most of the important elements of the problem  
• a considerable understanding of the relationships between important elements of the problem  
• appropriate conclusions with supporting evidence |
| 40   | Thinking process to draw and describe paths on a grid shows a high degree of effectiveness due to  
• a complete solution process  
• identification of all important elements of the problem  
• a thorough understanding of the relationships between all of the important elements of the problem  
• appropriate conclusions with thorough and insightful supporting evidence |
Code 10

Draw the **shortest** path from the school to the park and the **shortest** path from the school to the store on these grid lines.

Describe both paths.

**School to the park**

\[ I \text{ went 9 units down.} \]

**School to the store**

\[ I \text{ went 3 units down.} \]

**Annotation:**
Response demonstrates limited identification of important elements of the problem; shortest paths not drawn on grid lines and incorrect descriptions for both paths.
Question 16

Code 20

Draw the shortest path from the school to the park and the shortest path from the school to the store on these grid lines.

Describe both paths.

School to the park

It was 9 units from the school to the park.

School to the store

It was 5 units from the school to the store.

Annotation:
Response demonstrates identification of some important elements of the problem; shortest paths drawn for both (school to park and school to store) but descriptions incomplete for both paths (states total number of units only with no directions).
Question 16

Code 30

Draw the **shortest path** from the school to the park and the **shortest path** from the school to the store on these grid lines.

Describe both paths.

**School to the park**

go left four spaces, and down five spaces

**School to the store**

down three spaces and one space right.

Annotation:
Response demonstrates considerable understanding of the relationships between important elements of the problem; shortest paths drawn for both (school to park and school to store) with correct description for one (school to park only).
Question 16

Code 40

Draw the **shortest** path from the school to the park and the **shortest** path from the school to the store on these grid lines.

Describe both paths.

**School to the park**

5 down, 4 left

**School to the store**

2 right, 3 down

**Annotation:**
Response demonstrates identification of all important elements of the problem; shortest paths drawn for both (school to park and school to store) with correct descriptions.
### Question 17

<table>
<thead>
<tr>
<th>Code</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>• Blank: nothing written or drawn in response to the question</td>
</tr>
</tbody>
</table>
| I    | • Illegible: cannot be read; completely crossed out/erased; not written in English  
• Irrelevant content: does not attempt assigned question  
  (e.g., comment on the task, drawings, “?” , “!”, “I don’t know”)  
• Off topic: no relationship of written work to the question |
| 10   | Application of knowledge and skills to complete a shape using a line of symmetry and demonstrate an understanding of symmetry shows limited effectiveness due to  
• misunderstanding of concepts  
• incorrect selection or misuse of procedures |
| 20   | Application of knowledge and skills to complete a shape using a line of symmetry and demonstrate an understanding of symmetry shows some effectiveness due to  
• partial understanding of the concepts  
• errors and/or omissions in the application of the procedures |
| 30   | Application of knowledge and skills to complete a shape using a line of symmetry and demonstrate an understanding of symmetry shows considerable effectiveness due to  
• an understanding of most of the concepts  
• minor errors and/or omissions in the application of the procedures |
| 40   | Application of knowledge and skills to complete a shape using a line of symmetry and demonstrate an understanding of symmetry shows a high degree of effectiveness due to  
• a thorough understanding of the concepts  
• an accurate application of the procedures (any minor errors and/or omissions do not detract from the demonstration of a thorough understanding) |
Code 10

Complete the shape on the grid. Use the dotted line as a line of symmetry.

Draw all lines of symmetry on the shape.

Explain why these lines are lines of symmetry.

Annotation:
Response demonstrates misunderstanding of concepts; inaccurate drawing shown and no explanation about lines of symmetry.
Question 17

**Code 20**

Complete the shape on the grid. Use the dotted line as a line of symmetry.

Draw all lines of symmetry on the shape.

Explain why these lines are lines of symmetry.

The line in the middle is one because it's the same on both sides.

**Annotation:**
Response demonstrates partial understanding of the concepts; accurate drawing shown with one additional correct line of symmetry drawn with an incomplete explanation (its the same on both sides).
Question 17

Code 30

Complete the shape on the grid. Use the dotted line as a line of symmetry.

Draw all lines of symmetry on the shape.

Explain why these lines are lines of symmetry.

these lines are lines of symmetry because they are equal parts and they look the same in both halfs.

Annotation:
Response demonstrates an understanding of most of the concepts; accurate drawing shown with correct lines of symmetry drawn but explanation (they are equal parts) does not clearly demonstrate an understanding of symmetry.
Complete the shape on the grid. Use the dotted line as a line of symmetry.

Draw all lines of symmetry on the shape.

Explain why these lines are lines of symmetry.

I drew those lines there because if you actually fold it in half and it matches, it means that it is symmetrical.

**Annotation:**
Response demonstrates a thorough understanding of the concepts; accurate drawing shown and correct lines of symmetry drawn with explanation (*fold it in half and it matches, it means that it is symmetrical*).
### Question 18

<table>
<thead>
<tr>
<th>Code</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Blank: nothing written or drawn in response to the question</td>
</tr>
</tbody>
</table>
| I    | Illegible: cannot be read; completely crossed out/erased; not written in English  
     | Irrelevant content: does not attempt assigned question  
     | (e.g., comment on the task, drawings, “?”, “!”; “I don’t know”)  
     | Off topic: no relationship of written work to the question |
| 10   | Application of knowledge and skills to determine the number of lines of symmetry on four letters shows limited effectiveness due to  
     | • misunderstanding of concepts  
     | • incorrect selection or misuse of procedures |
| 20   | Application of knowledge and skills to determine the number of lines of symmetry on four letters shows some effectiveness due to  
     | • partial understanding of the concepts  
     | • errors and/or omissions in the application of the procedures |
| 30   | Application of knowledge and skills to determine the number of lines of symmetry on four letters shows considerable effectiveness due to  
     | • an understanding of most of the concepts  
     | • minor errors and/or omissions in the application of the procedures |
| 40   | Application of knowledge and skills to determine the number of lines of symmetry on four letters shows a high degree of effectiveness due to  
     | • a thorough understanding of the concepts  
     | • an accurate application of the procedures (any minor errors and/or omissions do not detract from the demonstration of a thorough understanding) |
Question 18

**Code 10**

Draw all lines of symmetry for each letter below.

A  H  T  Z

Explain how you know that the letter A shown above has a line of symmetry.

It does have a line of symmetry.

**Annotation:**
Response demonstrates misunderstanding of concepts; one letter correct (Z is blank but A, H and T are incorrect) and incomplete explanation.
Question 18

Code 20

Draw all lines of symmetry for each letter below.

A   H   T   Z

Explain how you know that the letter A shown above has a line of symmetry.

because it's the same thing on the other side

Annotation:
Response demonstrates partial understanding of concepts; two letters are correct (H and T are incorrect but correct line on A and Z is blank) with incomplete explanation (no reference to mira or fold, but mentions same on other side).
Code 30

Draw all lines of symmetry for each letter below.

A H T Z

Explain how you know that the letter A shown above has a line of symmetry.

Annotation:
Response demonstrates minor omissions in the application of the procedures; all four letters correct (one or both lines on H, correct lines on A and T and Z is blank) but no explanation.
Question 18

**Code 40**

Draw all lines of symmetry for each letter below.

A H T Z

Explain how you know that the letter A shown above has a line of symmetry.

A has a line of symmetry because if you use a mirror and put it in the middle you will see a reflection.

**Annotation:**
Response demonstrates an accurate application of the procedures; all four letters correct (all correct lines on A, H, T and Z blank) and complete explanation (includes both mirra and reflection).