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

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.

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.
How to Use This Resource (continued)

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 the same, the answer options can determine the category of knowledge and skills the question is mapped to.

**VERSION 1**

Which of these is equivalent to 8%?

a 80  
b 8  
c 0.8  
d 0.08

**VERSION 1**

To answer this question, students need to determine which value is equivalent to 8%. By the end of Grade 6, students should know this answer or be able to calculate it quickly. The category that the question is mapped to is **Knowledge and Understanding**.

(correct answer: d)

**VERSION 2**

Which of these is equivalent to 8%?

a \( \frac{2}{25} \)  
b \( \frac{2}{20} \)  
c \( \frac{1}{8} \)  
d \( \frac{8}{10} \)

**VERSION 2**

For version 2, the answer options have changed the category, as students need to determine which fraction is equivalent to 8%. One approach is to change 8% to a fraction and then compare \( \frac{8}{100} \) to the given fractions to determine which one is equivalent. The students can also change the fractions in the options to percentages and see which one is equivalent to 8%. As students are required to select a tool to answer this question, it is mapped to the category **Application**.

(correct answer: a)
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>
</table>
| The first term of a pattern is 28 672. The pattern rule is “divide by 4 to get the next term.”
| What is the 5th term? |
| a 28 |
| b 112 |
| c 448 |
| d 7168 |

<table>
<thead>
<tr>
<th>VERSION 2</th>
</tr>
</thead>
</table>
| A pattern is shown below. Each term increases by the same amount. 4, 41, 78, 115, 152, …
| What is the 9th term in the pattern? |
| a 226 |
| b 263 |
| c 300 |
| d 337 |

<table>
<thead>
<tr>
<th>VERSION 3</th>
</tr>
</thead>
</table>
| The terms of a pattern are made using toothpicks. Term 1 and Term 5 are not shown.

<table>
<thead>
<tr>
<th>Term 2</th>
<th>Term 3</th>
<th>Term 4</th>
</tr>
</thead>
</table>

Determine the total number of toothpicks used in Term 1 to Term 5 of this pattern.
Justify your answer.

The total number of toothpicks used in Term 1 to Term 5 of this pattern is _____.

<table>
<thead>
<tr>
<th>VERSION 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>This question is mapped to the category Knowledge and Understanding. Students start with the first term and apply the given pattern rule to determine the 5th term.</td>
</tr>
<tr>
<td>(correct answer: b)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VERSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>This question does not provide students with the pattern rule. They must first figure out the constant that the terms are increasing by and then apply it to determine the 9th term. Therefore, this question is mapped to Application, as the tool is not given.</td>
</tr>
<tr>
<td>(correct answer: c)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VERSION 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is an open-response question. It is mapped to the category Thinking, as students must make a plan. They must first figure out the pattern and then determine both Term 1 and Term 5. After that, students must determine the number of toothpicks in each term and add them together. Refer to question 19 in the Patterning and Algebra strand booklet for samples of student responses with annotations.</td>
</tr>
</tbody>
</table>
These polygons have been ordered from smallest to largest based on a geometric property.

Which property has been used to order the polygons?

- a. number of sides
- b. number of acute angles
- c. number of lines of symmetry
- d. number of pairs of parallel sides

This multiple-choice question is mapped to the category **Thinking**. Students need to use reasoning or make a plan. They need to determine which property was used by considering the four properties for each shape and then determining which one is increasing in value. Students can also consider which of the first shape’s properties has a value less than that of the second shape’s, and then try using that property on the rest of the shapes to see if the value continues to increase.

(correct answer: c)

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### VERSION 2

Complete the chart.

<table>
<thead>
<tr>
<th>Name</th>
<th>Number of acute angles</th>
<th>Number of obtuse angles</th>
<th>Number of lines of symmetry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Square</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rectangle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right trapezoid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isosceles trapezoid</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On the grid, draw and name a quadrilateral that has 2 obtuse angles and no lines of symmetry.

This open-response question is also mapped to the category **Thinking**. Students need to use reasoning or make a plan to answer the second part. Students must consider which quadrilateral has the given properties and then draw it. They may consider each type of quadrilateral and determine its properties, or they may try to draw one with the given properties.

Refer to question 14 in the Geometry and Spatial Sense strand booklet for samples of student responses with annotations.
Examples of questions

Data Management and Probability

Junior Division

Grade 6

Multiple-Choice and Open-Response Questions

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.
Two pools are being filled with water. The following table shows the height of the water in the pools at 4 different times.

<table>
<thead>
<tr>
<th>Time</th>
<th>Height (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pool A</td>
</tr>
<tr>
<td>8:00</td>
<td>50</td>
</tr>
<tr>
<td>9:00</td>
<td>100</td>
</tr>
<tr>
<td>10:00</td>
<td>160</td>
</tr>
<tr>
<td>11:00</td>
<td>205</td>
</tr>
</tbody>
</table>

Which graph displays the data in the table accurately?
2 A list of numbers is shown below:
43, 50, 58, 49, 57, 50, 44, 43, 54, 45
Which of the following stem and leaf plots represents these numbers?

- **Stem | Leaf**
  - 4 | 3, 4, 5, 9
  - 5 | 0, 4, 7, 8

- **Stem | Leaf**
  - 4 | 3, 3, 4, 5, 9
  - 5 | 0, 4, 7, 8

- **Stem | Leaf**
  - 4 | 3, 3, 5, 5, 9
  - 5 | 0, 0, 4, 7, 8

- **Stem | Leaf**
  - 4 | 3, 3, 5, 5, 9
  - 5 | 0, 0, 0, 4, 7, 8

3 Mrs. Sherman asks students to record their favourite subjects. The data is shown in the graph below.

According to the graph, how many more students chose math as their favourite subject than chose gym?

- 7
- 12
- 21
- 33
4 The chart below shows data about DVD sales for 2 weeks.

<table>
<thead>
<tr>
<th>DVD Type</th>
<th>Week 1</th>
<th>Week 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comedy</td>
<td>$75 800</td>
<td>$52 750</td>
</tr>
<tr>
<td>Mystery</td>
<td>$108 000</td>
<td>$99 700</td>
</tr>
<tr>
<td>Adventure</td>
<td>$75 800</td>
<td>$53 950</td>
</tr>
</tbody>
</table>

Which of the following statements about this data is **false**?

- Sales for all 3 DVD types decreased over the 2 weeks.
- Week 2 sales for all 3 DVD types totalled $206 400.
- Comedy sold less than either of the other types of DVDs over the 2 weeks.
- Total sales for adventure DVDs are about double those for mystery.

5 The graph below displays the amount of money earned at a craft sale over 4 days.

What is the range between the smallest and the largest amount of money earned over the 4 days?

- $175
- $150
- $75
- $25
6. Which statement about the pictograph is true?

- Twice as many basketballs as baseballs were sold.
- Twice as many baseballs as volleyballs were sold.
- An equal number of footballs and baseballs were sold.
- The total number of baseballs and basketballs sold was 55.

7. The following data gives the minimum temperature for six days.

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.0</td>
</tr>
<tr>
<td>16.0</td>
</tr>
<tr>
<td>18.0</td>
</tr>
<tr>
<td>23.0</td>
</tr>
<tr>
<td>18.0</td>
</tr>
<tr>
<td>24.0</td>
</tr>
</tbody>
</table>

What is the mean of these six temperatures?

- 18.0 °C
- 18.5 °C
- 19.5 °C
- 4.0 °C

8. Which set of data has a mean that is equal to its median?

- 4, 5, 5, 7, 9
- 4, 5, 6, 7, 8
- 4, 4, 6, 7, 7, 7
- 5, 5, 5, 6, 8, 8
9. A list of numbers is shown below.

   11, 5, 11, 9, 4

   What is the mean of these numbers?

   ○ 7
   ○ 8
   ○ 9
   ○ 11

10. Lucas has 5 T-shirts in a drawer: 1 red, 2 yellow, 1 pink and 1 blue. He selects one T-shirt without looking.

   What is the probability that Lucas selects a T-shirt that is not pink or blue?

   ○ $\frac{1}{5}$
   ○ $\frac{2}{5}$
   ○ $\frac{3}{5}$
   ○ $\frac{4}{5}$

11. Hayden randomly selects one date from this calendar.

<table>
<thead>
<tr>
<th>October</th>
</tr>
</thead>
<tbody>
<tr>
<td>S  M  Tu W Th F S</td>
</tr>
<tr>
<td>1  2  3  4  5  6  7</td>
</tr>
<tr>
<td>8  9 10 11 12 13 14</td>
</tr>
<tr>
<td>15 16 17 18 19 20 21</td>
</tr>
<tr>
<td>22 23 24 25 26 27 28</td>
</tr>
<tr>
<td>29 30 31</td>
</tr>
</tbody>
</table>

   What is the probability that it will be an odd-numbered date?

   ○ $\frac{1}{31}$
   ○ $\frac{7}{31}$
   ○ $\frac{15}{31}$
   ○ $\frac{16}{31}$
12 Isaac and Presley each have a jar of coloured cubes. The contents of their jars are shown in the table below.

<table>
<thead>
<tr>
<th>Colour of cube</th>
<th>Number of cubes in Isaac’s jar</th>
<th>Number of cubes in Presley’s jar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Blue</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Green</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Purple</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

They reach into their jars, and each chooses one cube without looking.

What colour of cube has the same probability of being chosen from Isaac’s jar as from Presley’s jar?

- red
- blue
- green
- purple

13 A spinner is shown below.

On which of the following number lines does the point represent the probability of spinning an even number?

- 0
- 1

- 0
- 1
14 Henry designs the spinner below and labels the sections with the names of colours.

He wants 0.15 to be the probability of the arrow landing on “blue” in one spin.

How many sections should he label “blue”?

- 2
- 3
- 15
- 17

15 There are 2 blue, 5 green, 6 red and 7 purple marbles in a bag. Erin picks one marble from the bag without looking.

What is the probability that she will pick a marble that is purple?

- 7%
- 20%
- 35%
- 54%
Matthew collects data about the vehicles that pass his school over three days. He makes the graph below.

Matthew concludes that about twice as many cars as trucks pass the school over the 3-day period. Is his conclusion correct?

Circle one: Yes No

Justify your answer.
Toby has a bag of 40 coloured blocks. Without looking, he reaches in and pulls one block out.

Complete the table below to determine the probability of choosing a red, green, purple or yellow block.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Number in bag</th>
<th>Probability of choosing a block of this colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Purple</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yellow</td>
<td></td>
<td>0.2</td>
</tr>
</tbody>
</table>

Show your work.
Connor has a bag of coloured tiles. There are 1 green, 3 black, 5 blue and 6 red tiles. He reaches into the bag and chooses 1 tile without looking.

What is the probability that the tile is **not** red?

Justify your answer.

Show the value of the probability on the number line below.
19 Consider the two spinners below. Spinner A is divided into 10 equal sections, and Spinner B is divided into 5 equal sections.

Which colours have the same probability of being spun on Spinner A as they do on Spinner B? Justify your answers.
Lucy is making a game. She uses the net of congruent pentagons below to make a 12-sided figure to roll.

Each pentagon will be labelled A, B, C or D. Write A, B or C on pentagons of the net so that

- the probability of rolling an A is \(\frac{1}{6}\).
- the probability of rolling a B is \(\frac{2}{12}\).
- the probability of rolling a C is \(\frac{3}{9}\).

What is the probability of rolling a D? Justify your answer.

The probability of rolling a D is ______________________ .
Nicky spins the arrow on this spinner 56 times.

Complete the chart.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Theoretical probability of the arrow landing on this colour as a percent</th>
<th>Number of spins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>56</td>
</tr>
</tbody>
</table>

Show your work.
## Detailed Information About the Questions

### Data Management and Probability

#### 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>2012</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>b</td>
</tr>
<tr>
<td>3</td>
<td>2013</td>
<td>2</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>2015</td>
<td>2</td>
<td>AP</td>
<td>b</td>
</tr>
<tr>
<td>6</td>
<td>2016</td>
<td>2</td>
<td>AP</td>
<td>d</td>
</tr>
<tr>
<td>7</td>
<td>2012</td>
<td>2</td>
<td>KU</td>
<td>c</td>
</tr>
<tr>
<td>8</td>
<td>2013</td>
<td>2</td>
<td>AP</td>
<td>b</td>
</tr>
<tr>
<td>9</td>
<td>2014</td>
<td>2</td>
<td>AP</td>
<td>b</td>
</tr>
<tr>
<td>10</td>
<td>2012</td>
<td>3</td>
<td>AP</td>
<td>c</td>
</tr>
<tr>
<td>11</td>
<td>2016</td>
<td>3</td>
<td>AP</td>
<td>d</td>
</tr>
<tr>
<td>12</td>
<td>2015</td>
<td>3</td>
<td>TH</td>
<td>b</td>
</tr>
<tr>
<td>13</td>
<td>2014</td>
<td>3</td>
<td>AP</td>
<td>a</td>
</tr>
<tr>
<td>14</td>
<td>2012</td>
<td>3</td>
<td>TH</td>
<td>b</td>
</tr>
<tr>
<td>15</td>
<td>2013</td>
<td>3</td>
<td>TH</td>
<td>c</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>16</td>
<td>2012</td>
<td>2</td>
<td>TH</td>
</tr>
<tr>
<td>17</td>
<td>2014</td>
<td>3</td>
<td>AP</td>
</tr>
<tr>
<td>18</td>
<td>2012</td>
<td>3</td>
<td>AP</td>
</tr>
<tr>
<td>19</td>
<td>2013</td>
<td>3</td>
<td>AP</td>
</tr>
<tr>
<td>20</td>
<td>2015</td>
<td>3</td>
<td>AP</td>
</tr>
<tr>
<td>21</td>
<td>2016</td>
<td>3</td>
<td>AP</td>
</tr>
</tbody>
</table>

### Legend

- **Cognitive Skill**
  - KU | Knowledge and Understanding
  - AP | Application
  - TH | Thinking

*This is the number of the overall expectation in the Data Management and Probability strand that the question is mapped to. The overall expectations are numbered according to the order in which they appear in *The Ontario Curriculum.*
Junior Division

Grade 6

Open-Response Questions

Item-specific rubrics and sample student responses with annotations

QUESTIONS 16 TO 21
### 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>
<tr>
<td>I</td>
<td>Illegible: cannot be read; completely crossed out/erased; not written in English</td>
</tr>
<tr>
<td></td>
<td>Irrelevant content: does not attempt assigned question (e.g., comment on the task, drawings, “?”, “!”; “I don’t know”)</td>
</tr>
<tr>
<td></td>
<td>Off topic: no relationship of written work to the question</td>
</tr>
<tr>
<td>10</td>
<td>Problem-solving process to read, interpret and draw conclusions from data shows limited effectiveness due to</td>
</tr>
<tr>
<td></td>
<td>minimal evidence of a solution process</td>
</tr>
<tr>
<td></td>
<td>limited identification of important elements of the problem</td>
</tr>
<tr>
<td></td>
<td>too much emphasis on unimportant elements of the problem</td>
</tr>
<tr>
<td></td>
<td>no conclusions presented</td>
</tr>
<tr>
<td></td>
<td>conclusion presented without supporting evidence</td>
</tr>
<tr>
<td>20</td>
<td>Problem-solving process to read, interpret and draw conclusions from data shows some effectiveness due to</td>
</tr>
<tr>
<td></td>
<td>an incomplete solution process</td>
</tr>
<tr>
<td></td>
<td>identification of some of the important elements of the problem</td>
</tr>
<tr>
<td></td>
<td>some understanding of the relationships between important elements of the problem</td>
</tr>
<tr>
<td></td>
<td>simple conclusions with little supporting evidence</td>
</tr>
<tr>
<td>30</td>
<td>Problem-solving process to read, interpret and draw conclusions from data shows considerable effectiveness due to</td>
</tr>
<tr>
<td></td>
<td>a solution process that is nearly complete</td>
</tr>
<tr>
<td></td>
<td>identification of most of the important elements of the problem</td>
</tr>
<tr>
<td></td>
<td>a considerable understanding of the relationships between important elements of the problem</td>
</tr>
<tr>
<td></td>
<td>appropriate conclusions with supporting evidence</td>
</tr>
<tr>
<td>40</td>
<td>Problem-solving process to read, interpret and draw conclusions from data shows a high degree of effectiveness due to</td>
</tr>
<tr>
<td></td>
<td>a complete solution process</td>
</tr>
<tr>
<td></td>
<td>identification of all important elements of the problem</td>
</tr>
<tr>
<td></td>
<td>a thorough understanding of the relationships between all of the important elements of the problem</td>
</tr>
<tr>
<td></td>
<td>appropriate conclusions with thorough and insightful supporting evidence</td>
</tr>
</tbody>
</table>
Matthew collects data about the vehicles that pass his school over three days. He makes the graph below.

Matthew concludes that about twice as many cars as trucks pass the school over the 3-day period. Is his conclusion correct?

Circle one: Yes  No

Justify your answer.

He's correct because the line on the graph is larger than the line on the graph for trucks. Basically this:

<table>
<thead>
<tr>
<th>Cars</th>
<th>travel more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trucks</td>
<td>travel less</td>
</tr>
</tbody>
</table>

Annotation:
Response demonstrates a limited identification of important elements of the problem; no totals for the number of cars or trucks over the 3-day period are given and conclusion (Yes) is justified with a comparison of the lines.
Matthew collects data about the vehicles that pass his school over three days. He makes the graph below.

Matthew concludes that about twice as many cars as trucks pass the school over the 3-day period. Is his conclusion correct?

Circle one: Yes  No

Justify your answer.

In the three day period

truck cars
42  80

Almost half as many.

Annotation:
Response demonstrates an identification of some of the important elements of the problem; shows comparison of the number of cars to the number of trucks for Wednesday only and conclusion (No) is incorrect based on justification stating half.
Matthew collects data about the vehicles that pass his school over three days. He makes the graph below.

Matthew concludes that about twice as many cars as trucks pass the school over the 3-day period. Is his conclusion correct?

Circle one:  Yes  No

Justify your answer.

Yes he is right because he said about twice as many cars as trucks pass the school over the 3-day period.

Annotation:
Response demonstrates an identification of most of the important elements of the problem; shows accurate totals for the number of cars and trucks for all three days, but conclusion (Yes) is not justified.
Matthew collects data about the vehicles that pass his school over three days. He makes the graph below.

Matthew concludes that about twice as many cars as trucks pass the school over the 3-day period. Is his conclusion correct?

Circle one:  Yes  No

Justify your answer.

<table>
<thead>
<tr>
<th>Day</th>
<th>Cars</th>
<th>Trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Tues</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Wed</td>
<td>80</td>
<td>45</td>
</tr>
</tbody>
</table>

\[
\text{Total Cars: } 150 \quad \text{Total Trucks: } 95
\]

No because if twice as many cars passed there would have to be 75 or 190 trucks.

**Annotation:**
Response demonstrates an identification of all important elements of the problem; shows accurate totals for the number of cars and trucks for all three days and conclusion (No) is justified with half the number of cars and twice the number of trucks (Note: both are not needed).
### 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 the table to determine the probability of choosing each of the four colours shows limited effectiveness due to  
      • misunderstanding of concepts  
      • incorrect selection or misuse of procedures |
| 20   | Application of knowledge and skills to complete the table to determine the probability of choosing each of the four colours 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 the table to determine the probability of choosing each of the four colours 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 the table to determine the probability of choosing each of the four colours 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) |
Toby has a bag of 40 coloured blocks. Without looking, he reaches in and pulls one block out. Complete the table below to determine the probability of choosing a red, green, purple or yellow block.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Number in bag</th>
<th>Probability of choosing a block of this colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>6</td>
<td>0.1</td>
</tr>
<tr>
<td>Green</td>
<td>10</td>
<td>0.2</td>
</tr>
<tr>
<td>Purple</td>
<td>14</td>
<td>0.5</td>
</tr>
<tr>
<td>Yellow</td>
<td>10</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Show your work.

\[
\begin{align*}
40 & \\
-10 & \\
\hline
30 & \\
-6 & \\
\hline
24 & \\
\end{align*}
\]

\[
\begin{align*}
-1.0 & \\
-0.2 & \\
\hline
0.8 & \\
\end{align*}
\]

Annotation:
Response demonstrates misunderstanding of concepts; did not correctly determine any missing numbers in bag or probabilities.
**Question 17**

**Code 20**

Toby has a bag of 40 coloured blocks. Without looking, he reaches in and pulls one block out. Complete the table below to determine the probability of choosing a red, green, purple or yellow block.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Number in bag</th>
<th>Probability of choosing a block of this colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>6</td>
<td>$\frac{6}{40}$</td>
</tr>
<tr>
<td>Green</td>
<td>10</td>
<td>$\frac{10}{40}$</td>
</tr>
<tr>
<td>Purple</td>
<td>4</td>
<td>$\frac{4}{40}$</td>
</tr>
<tr>
<td>Yellow</td>
<td>20</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Show your work.

\[6 + 10 + 4 + 20 = 40\]

\[6 = 6/40\]
\[10 = 10/40\]
\[4 = 4/40\]
\[20 = 0.2\]

**Annotation:**
Response demonstrates partial understanding of the concepts; correctly determined two missing probabilities only.
Toby has a bag of 40 coloured blocks. Without looking, he reaches in and pulls one block out. Complete the table below to determine the probability of choosing a red, green, purple or yellow block.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Number in bag</th>
<th>Probability of choosing a block of this colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>6</td>
<td>0.15</td>
</tr>
<tr>
<td>Green</td>
<td>10</td>
<td>0.25</td>
</tr>
<tr>
<td>Purple</td>
<td>16</td>
<td>0.5</td>
</tr>
<tr>
<td>Yellow</td>
<td>3</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Show your work.

**Annotation:**
Response demonstrates minor errors in the application of the procedures; correctly determined both missing numbers in bag and two missing probabilities.
Toby has a bag of 40 coloured blocks. Without looking, he reaches in and pulls one block out. Complete the table below to determine the probability of choosing a red, green, purple or yellow block.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Number in bag</th>
<th>Probability of choosing a block of this colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>6</td>
<td>(\frac{6}{40})</td>
</tr>
<tr>
<td>Green</td>
<td>10</td>
<td>(\frac{10}{40})</td>
</tr>
<tr>
<td>Purple</td>
<td>16</td>
<td>(\frac{16}{40})</td>
</tr>
<tr>
<td>Yellow</td>
<td>8</td>
<td>(\frac{8}{40}) 0.2</td>
</tr>
</tbody>
</table>

Show your work.

\[
\frac{0.2 \times 4.0}{6} = \frac{8}{24} = \frac{6}{30} = \frac{2}{10} = \frac{10}{40}
\]

I found out how many yellow there were. Then I added up all of the 3 numbers. Then I had to find a number to make 24 add up to 40. After I knew that I could finish the chart.

**Annotation:**
Response demonstrates an accurate application of the procedures; correctly determined both missing numbers in bag and all three missing probabilities with calculations shown.
## 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 represent the probability that the tile is not red shows limited effectiveness due to  
• misunderstanding of concepts  
• incorrect selection or misuse of procedures |
| 20   | Application of knowledge and skills to represent the probability that the tile is not red 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 represent the probability that the tile is not red 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 represent the probability that the tile is not red 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) |
Connor has a bag of coloured tiles. There are 1 green, 3 black, 5 blue and 6 red tiles. He reaches into the bag and chooses 1 tile without looking.

What is the probability that the tile is not red?

Justify your answer.

The probability of getting a red title is high because there are more red tiles than getting a green or black. There's a 50/50 chance of getting blue, since it's not that low or a chance and not that high. It's in the middle.

Show the value of the probability on the number line below.

[Diagram showing values: Green 19%, Black 25%, Blue 50%, Red Titles]
Connor has a bag of coloured tiles. There are 1 green, 3 black, 5 blue and 6 red tiles. He reaches into the bag and chooses 1 tile without looking.

What is the probability that the tile is not red?

Justify your answer.

I think that the probability is more likely to get a red because the red is out of \( \frac{6}{9} \) so that's why.

Show the value of the probability on the number line below.

```
0
\frac{6}{9}
1
```

**Annotation:**
Response demonstrates a partial understanding of the concepts; stated probability is number of red tiles over the total number of remaining tiles (\( \frac{6}{9} \)), plot and label of this value is accurate on the number line.
Connor has a bag of coloured tiles. There are 1 green, 3 black, 5 blue and 6 red tiles. He reaches into the bag and chooses 1 tile without looking.

What is the probability that the tile is not red?

Justify your answer.

The probability of the tile not being red is \( \frac{6}{15} \)

I added all of the tiles and how many were red.

Show the value of the probability on the number line below.

Annotation:
Response demonstrates an understanding of most of the concepts; probability stated is of the tile being red (\( \frac{6}{15} \)), instead of not red, plot and label of this value is accurate on the number line (less than \( \frac{1}{2} \)).
Connor has a bag of coloured tiles. There are 1 green, 3 black, 5 blue and 6 red tiles. He reaches into the bag and chooses 1 tile without looking.

What is the probability that the tile is not red?

Justify your answer.

The probability is $\frac{9}{15}$ that he will not choose a red tile.

Show the value of the probability on the number line below.

Annotation:
Response demonstrates a thorough understanding of the concepts; shows correct probability that the tile is not red ($\frac{9}{15}$), plot and label of this value is accurate on the number line (unit is broken into fifteenths).
### Question 19

<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 which colours have the same probability of being spun on Spinner A and Spinner B shows limited effectiveness due to  
• misunderstanding of concepts  
• incorrect selection or misuse of procedures |
| 20   | Application of knowledge and skills to determine which colours have the same probability of being spun on Spinner A and Spinner B 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 which colours have the same probability of being spun on Spinner A and Spinner B 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 which colours have the same probability of being spun on Spinner A and Spinner B 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) |
Consider the two spinners below. Spinner A is divided into 10 equal sections, and Spinner B is divided into 5 equal sections.

Which colours have the same probability of being spun on Spinner A as they do on Spinner B? Justify your answers.

Red because on Spinner A it appears 4 times and Spinner B it appears 2 times.

Annotation:
Response demonstrates misunderstanding of concepts; correct conclusion of one colour (red) only and shows number of sections on Spinner A and Spinner B for red but does not make a comparison.
Question 19

Code 20

Consider the two spinners below. Spinner A is divided into 10 equal sections, and Spinner B is divided into 5 equal sections.

Which colours have the same probability of being spun on Spinner A as they do on Spinner B? Justify your answers.

red because there is 4 spaces red in spinner A and 2 in spinner B, and 1 space in B is equal to 2 spaces in A, so red is more easy to get.

Annotation:
Response demonstrates omissions in the application of the procedures; correct conclusion of one colour (red) only and compares number of sections on Spinner A and Spinner B for red but no fractional language or equivalent to describe probability.
Consider the two spinners below. Spinner A is divided into 10 equal sections, and Spinner B is divided into 5 equal sections.

Which colours have the same probability of being spun on Spinner A as they do on Spinner B? Justify your answers.

Annotation:
Response demonstrates minor omissions in the application of the procedures; correct conclusion of one colour (yellow) only and compares fractional amounts on Spinner A and Spinner B.
Consider the two spinners below. Spinner A is divided into 10 equal sections, and Spinner B is divided into 5 equal sections.

Which colours have the same probability of being spun on Spinner A as they do on Spinner B?

Justify your answers.

Red and yellow both have the same probability of being spun on spinner A as they do on spinner B. On spinner A red has a $\frac{4}{10}$ which is equivalent to the $\frac{2}{5}$ on spinner B. On spinner A yellow has a $\frac{2}{10}$ chance which is equivalent to the $\frac{1}{5}$ on spinner B.

Annotation:
Response demonstrates a thorough understanding of the concepts; correct conclusion of red and yellow and compares fractional amounts on Spinner A and Spinner B for both colours to describe probability.
## Question 20

<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 probability of rolling a “D” shows limited effectiveness due to  
• misunderstanding of concepts  
• incorrect selection or misuse of procedures |
| 20   | Application of knowledge and skills to determine the probability of rolling a “D” 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 probability of rolling a “D” 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 probability of rolling a “D” 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

Lucy is making a game. She uses the net of congruent pentagons below to make a 12-sided figure to roll.

Each pentagon will be labelled A, B, C or D.
Write A, B or C on pentagons of the net so that
- the probability of rolling an A is \( \frac{1}{6} \).
- the probability of rolling a B is \( \frac{2}{12} \).
- the probability of rolling a C is \( \frac{3}{6} \).

What is the probability of rolling a D?
Justify your answer

The probability of rolling a D is \( \frac{6}{18} \).

Annotation:
Response demonstrates misunderstanding of concepts; correct number of letters written on pentagons for B (2), but incorrect for A (1) and C (2), and inaccurately determines the probability of rolling a D (\( \frac{6}{18} \)) based on errors.
Lucy is making a game. She uses the net of congruent pentagons below to make a 12-sided figure to roll.

Each pentagon will be labelled A, B, C or D. Write A, B or C on pentagons of the net so that

* the probability of rolling an A is \( \frac{1}{6} \).
* the probability of rolling a B is \( \frac{2}{12} \).
* the probability of rolling a C is \( \frac{3}{12} \).

What is the probability of rolling a D?

Justify your answer.

The probability of rolling a D is \( \frac{5}{12} \).

**Annotation:**
Response demonstrates partial understanding of the concepts; correct number of letters written on pentagons for B (2), but incorrect for A (1) and C (3), and accurately determines the probability of rolling a D (\( \frac{5}{12} \)) based on errors.
Lucy is making a game. She uses the net of congruent pentagons below to make a 12-sided figure to roll.

Each pentagon will be labelled A, B, C or D.
Write A, B or C on pentagons of the net so that

- the probability of rolling an A is \( \frac{1}{6} \).
- the probability of rolling a B is \( \frac{2}{12} \).
- the probability of rolling a C is \( \frac{3}{9} \).

What is the probability of rolling a D?

\[
\text{The probability of rolling a D is } \frac{5}{12}.
\]

**Annotation:**
Response demonstrates a minor error in the application of the procedures; correct number of letters written on pentagons for A (2) and B (2), but incorrect for C (3), and accurately determines the probability of rolling a D (\( \frac{5}{12} \)) based on error.
Lucy is making a game. She uses the net of congruent pentagons below to make a 12-sided figure to roll.

Each pentagon will be labelled A, B, C or D.
Write A, B or C on pentagons of the net so that

- the probability of rolling an A is $\frac{1}{6}$.
- the probability of rolling a B is $\frac{2}{12}$.
- the probability of rolling a C is $\frac{3}{12}$.

What is the probability of rolling a D?
Justify your answer.

The probability of rolling a D is $\frac{4}{12}$.

Annotation:
Response demonstrates a thorough understanding of the concepts; correct number of letters written on pentagons for A (2), B (2) and C (4), and accurately determines the probability of rolling a D ($\frac{4}{12}$).
### Question 21

<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 theoretical probability of the arrow landing on 3 colours shows limited effectiveness due to  
          • misunderstanding of concepts  
          • incorrect selection or misuse of procedures |
| 20   | Application of knowledge and skills to determine the theoretical probability of the arrow landing on 3 colours 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 theoretical probability of the arrow landing on 3 colours 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 theoretical probability of the arrow landing on 3 colours 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) |
Nicky spins the arrow on this spinner 56 times.

Complete the chart.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Theoretical probability of the arrow landing on this colour as a percent</th>
<th>Number of spins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>25%</td>
<td>31</td>
</tr>
<tr>
<td>Blue</td>
<td>50%</td>
<td>6</td>
</tr>
<tr>
<td>Red</td>
<td>25%</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>56</td>
</tr>
</tbody>
</table>

Show your work.

Annotation:
Response demonstrates misunderstanding of concepts; 0-1 of the 6 values correct in chart (one – theoretical probability for green) and number of spins do not add to 56.
Nicky spins the arrow on this spinner 56 times.

Complete the chart.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Theoretical probability of the arrow landing on this colour as a percent</th>
<th>Number of spins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>25%</td>
<td>5</td>
</tr>
<tr>
<td>Blue</td>
<td>2.5%</td>
<td>50</td>
</tr>
<tr>
<td>Red</td>
<td>12.5%</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>160%</td>
<td>56</td>
</tr>
</tbody>
</table>

Show your work.

**Annotation:**
Response demonstrates partial understanding of the concepts; 2-3 of the 6 values correct in chart (three – theoretical probability for green, blue and red). Note: Probabilities expressed as a fraction or decimal do not detract from understanding only for a Code 20.
Question 21

Code 30

Nicky spins the arrow on this spinner 56 times.

Complete the chart.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Theoretical probability of the arrow landing on this colour as a percent</th>
<th>Number of spins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>$\frac{1}{4} \times 2 = \frac{2}{8}$</td>
<td>14</td>
</tr>
<tr>
<td>Blue</td>
<td>$\frac{5}{8}$</td>
<td>31.5</td>
</tr>
<tr>
<td>Red</td>
<td>$\frac{1}{8}$</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>$\frac{8}{8}$</td>
<td>56</td>
</tr>
</tbody>
</table>

Show your work.

Green $\frac{56}{4} = 14$
Blue $\frac{56}{2} = 28$
$\frac{56}{8} = \frac{7}{8}$
Red $\frac{56}{8} = 7$

Annotation:
Response demonstrates minor errors in the application of the procedures; all 6 values correct in chart, but theoretical probabilities written using fractions (or decimals) instead of percentages, with or without total.
Nicky spins the arrow on this spinner 56 times.

Complete the chart.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Theoretical probability of the arrow landing on this colour as a percent</th>
<th>Number of spins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>25%</td>
<td>14</td>
</tr>
<tr>
<td>Blue</td>
<td>62.5%</td>
<td>35</td>
</tr>
<tr>
<td>Red</td>
<td>12.5%</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>56</td>
</tr>
</tbody>
</table>

Show your work.

\[
green = \frac{100}{4} = 25\%  \\
red = \frac{100}{8} = 12.5\%
\]

Annotation:
Response demonstrates an accurate application of the procedures; all 6 values (theoretical probabilities as a percent and number of spins for the three colours) and the total are correct in the chart with some work shown.