

Consolidation of Grade 6 EQAO Questions



Data Management and Probability

SE2 Families of Schools

GRADE SIX EQAO QUESTIONS: Data Management and Probability

Year	DV1	DV2	DV3
Spring 2006	MC26 OR27	MC6 MC12	MC13 MC36 OR10
Spring 2007	MC26	MC12 MC32 OR28	MC11 MC33 OR7
Spring 2008	MC13	MC11 MC36 OR29	MC12 MC35 OR9
Spring 2009	OR27	MC11 MC13 MC36	MC12 MC35 OR8
Spring 2010		MC11 MC13 MC36 OR9	MC12 MC35 OR27

OVERALL EXPECTATIONS

DV1

- Collect and organize discrete or continuous primary data and secondary data and display the data using charts and graphs, including continuous line graphs

DV2

- Read, describe, and interpret data, and explain relationships between sets of data

DV3

- Determine the theoretical probability of an outcome in a probability experiment, and use it to predict the frequency of the outcome

DATA MANAGEMENT & PROBABILITY: Collection and Organization of Data

Grade 4	Grade 5	Grade 6
Overall Expectation		
- collect and organize discrete primary data and display the data using charts and graphs, including stem-and-leaf plots and double bar graphs	- collect and organize discrete or continuous primary data and secondary data and display the data using charts and graphs, including broken-line graphs	- collect and organize discrete or continuous primary data and secondary data and display the data using charts and graphs, including continuous line graphs
Specific Expectations		
	– distinguish between discrete data (i.e., data organized using numbers that have gaps between them, such as whole numbers, and often used to represent a count, such as the number of times a word is used) and continuous data (i.e., data organized using all numbers on a number line that fall within the range of the data, and used to represent measurements such as heights or ages of trees)	
- collect data by conducting a survey or an experiment to do with themselves, their environment, issues in their school or the community, or content from another subject, and record observations or measurements	- collect data by conducting a survey or an experiment do with themselves, their environment, issues in their school or community, or content from another subject, and record observations or measurements	- collect data by conducting a survey or an experiment to do with themselves, their environment, issues in their school or community, or content from another subject, and record observations or measurements
- collect and organize discrete primary data and display the data in charts, tables, and graphs (including stem-and-leaf plots and double bar graphs) that have appropriate titles, labels, and scales that suit the range and distribution of the data, using a variety of tools	- collect and organize discrete or continuous primary data and secondary data and display the data in charts, tables, and graphs (including broken-line graphs) that have appropriate titles, labels and scales that suit the range and distribution of the data using a variety of tools	- collect and organize discrete or continuous primary data and secondary data and display the data in charts, tables, and graphs (including continuous line graphs) that have appropriate titles, labels, and scales that suit the range and distribution of the data, using a variety of tools
	- demonstrate an understanding that sets of data can be samples of larger populations	- determine, through investigation, how well a set of data represents a population, on the basis of the method that was used to collect the data
	- describe, through investigation, how a set of data is collected and explain whether the collection method is appropriate	
		– select an appropriate type of graph to represent a set of data, graph the data using technology, and justify the choice of graph (i.e., from types of graphs already studied, such as pictographs, horizontal or vertical bar graphs, stem-and-leaf plots, double bar graphs, broken-line graphs, and continuous line graphs)

DATA MANAGEMENT & PROBABILITY: Data Relationships

Grade 4	Grade 5	Grade 6
Overall Expectations		
- read, describe, and interpret primary data and secondary data presented in charts and graphs, including stem-and-leaf plots and double bar graphs	- read, describe, and interpret primary data and secondary data presented in charts and graphs, including broken-line graphs	- read, describe, and interpret data, and explain relationships between sets of data
Specific Expectations		
- read, interpret, and draw conclusions from primary data from secondary data presented in charts, tables, and graphs (including stem-and-leaf plots and double bar graphs)	- read, interpret, and draw conclusions from primary data and from secondary data	- read, interpret, and draw conclusions from primary data and from secondary data, presented in charts, tables, and graphs (including continuous line graphs)
- describe the shape of a set of data across its range of values, using charts, tables, and graphs	- calculate the mean for a small set of data and use it to describe the shape of the data set across its range of values, using charts, tables, and graphs	- demonstrate an understanding of mean, and use the mean to compare two sets of related data, with and without the use of technology
- compare similarities and differences between two related sets of data, using a variety of strategies	- compare similarities and differences between two related sets of data, using a variety of strategies	
- demonstrate, through investigation, an understanding of median and determine the median of a set of data		
		- compare, through investigation, different graphical representations of the same data
		- demonstrate, through investigation, an understanding of how data from charts, tables, and graphs can be used to make inferences and convincing arguments
		- explain how different scales used on graphs can influence conclusions drawn from the data

DATA MANAGEMENT & PROBABILITY: Probability

Grade 4	Grade 5	Grade 6
Overall Expectations		
- predict the results of a simple probability experiment, then conduct the experiment and compare the prediction to the results	- represent as a fraction the probability that a specific outcome will occur in a simple probability experiment, using systematic lists and area models	- determine the theoretical probability of an outcome in a probability experiment, and use it to predict the frequency of the outcome
Specific Expectations		
	- determine and represent all the possible outcomes in a simple probability experiment, using systematic lists and area models	
		- express theoretical probability as a ratio of the number of favourable outcomes to the total number of possible outcomes, where all outcomes are equally likely
- predict the frequency of an outcome in a simple probability experiment, explaining their reasoning; conduct the experiment; and compare the result with the prediction	- pose and solve simple probability problems, and solve them by conducting probability experiments and selecting appropriate methods of recording the results	- predict the frequency of an outcome of a simple probability experiment or game, by calculating and using the theoretical probability of that outcome
- determine, through investigation, how the number of repetitions of a probability experiment can affect the conclusions drawn		
	- represent, using a common fraction, the probability that an event will occur in simple games and probability experiments	- represent the probability of an event (i.e., the likelihood that the event will occur), using a value from the range of 0 (never happens or impossible) to 1 (always happens or certain)

GRADE SIX EQAO QUESTIONS: Data Management and Probability

Overall Expectation #1:

- Collect and organize discrete or continuous primary data and secondary data and display the data using charts and graphs, including continuous line graphs

Spring 2006

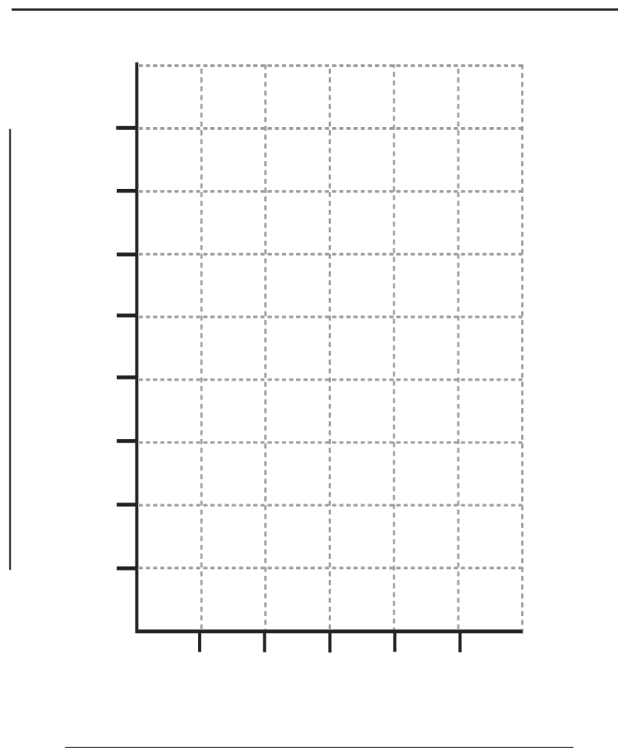
- 26** Johnna is planning a survey of students in her classroom. She wants to find their favourite food for lunch at school. Which of the following would be the best question for Johnna to ask in her survey?
- a “What is your favourite food?”
 - b “What are your friends’ favourite foods?”
 - c “What is your favourite food for lunch at school?” *
 - d “What is your favourite food—a sandwich or soup?”

GRADE SIX EQAO QUESTIONS: Data Management and Probability

27 Ranjit makes the chart below to record the amount of money collected during a fundraising event.

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Amount of Money Collected	\$50	\$125	\$75	\$25	\$175

Make a broken-line graph to represent the data. Remember to include all titles and labels.



Explain your choice of scale.

GRADE SIX EQAO QUESTIONS: Data Management and Probability

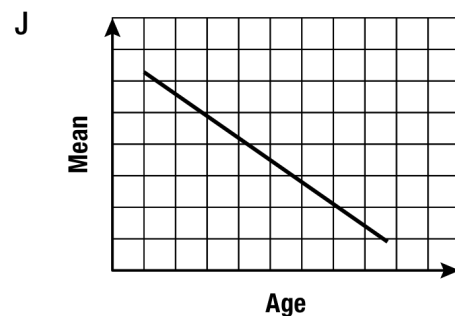
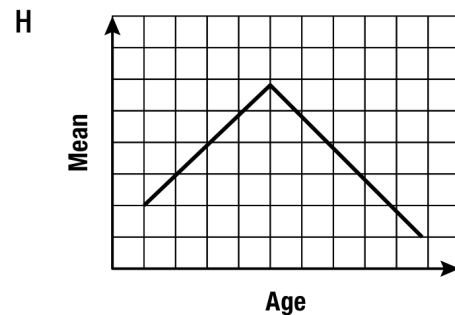
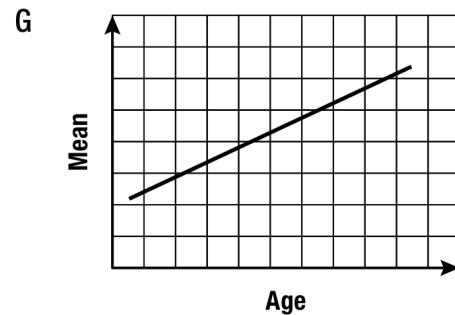
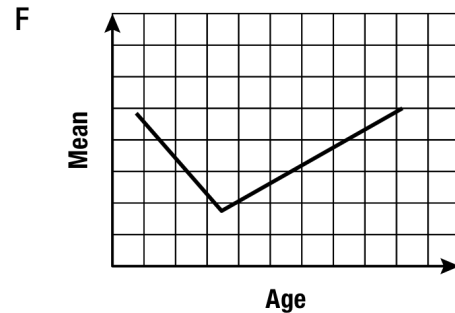
Spring 2007

- 26** Some students are asked to test a new video game. The students are sorted by their ages, and the mean score for each age group is calculated. The table below shows a comparison of age and the mean of the video game scores.

Video Game Scores

Age	Mean
11	400
12	450
13	500
14	550
15	500
16	450
17	400
18	350

Which graph below best represents the results from this table?



GRADE SIX EQAO QUESTIONS: Data Management and Probability

Spring 2008

- 13** Mrs. Smyte records the number of people in the school auditorium every hour during a school day. The data she collects show a maximum of 325 people in the auditorium. Which of the following is an appropriate scale for the vertical axis of the line graph for these data?
- a 7 increments with each increment representing 40 people
 - b 10 increments with each increment representing 35 people
 - c 15 increments with each increment representing 20 people
 - d 20 increments with each increment representing 12 people

GRADE SIX EQAO QUESTIONS: Data Management and Probability

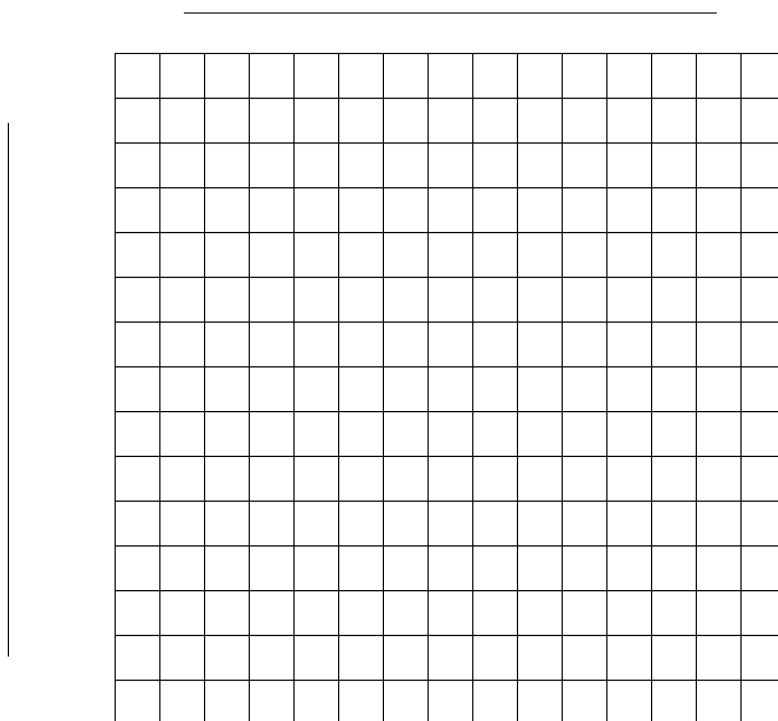
Spring 2009

27 The table below shows the weekly video sales at a store over a five-week period. EQME21104

Videos Sold

Week	1	2	3	4	5
Number of videos sold	550	325	275	100	50

Draw a broken-line graph to represent this data. Show titles and labels on the graph.



Explain why a broken-line graph is the most appropriate graph to represent this data.

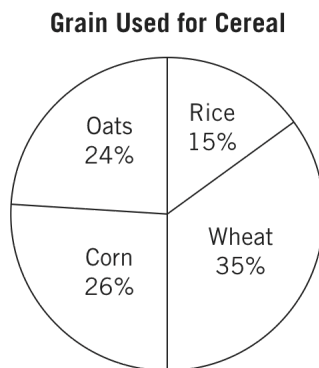
GRADE SIX EQAO QUESTIONS: Data Management and Probability

Overall Expectation #2:

- Collect and organize discrete or continuous primary data and secondary data and display the data using charts and graphs, including continuous line graphs

Spring 2006

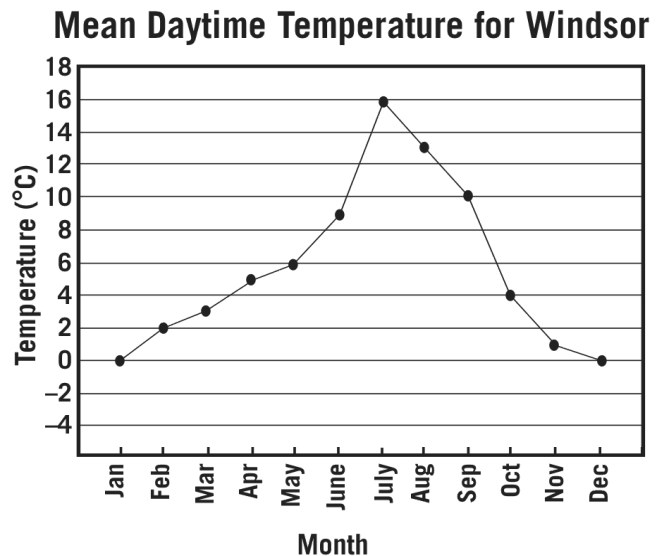
- 6** The graph below shows grain used to make cereal at a breakfast food factory.



Based on the graph, which of the following statements is true?

- The amount of wheat used is more than the combined amount of corn and oats.
- The amount of corn used is more than the combined amount of oats and rice.
- The combined amount of wheat and rice used is the same as the combined amount of corn and oats. *
- The combined amount of oats and rice used is the same as the amount of wheat.

- 12** The graph below shows the mean daytime temperature for Windsor.



Which month has a mean daytime temperature that is twice April's?

- July
- August
- September *
- October

GRADE SIX EQAO QUESTIONS: Data Management and Probability

Spring 2007

- 12** The heights of the 5 starting players on a basketball team are shown in the table below.

Starting Players' Heights

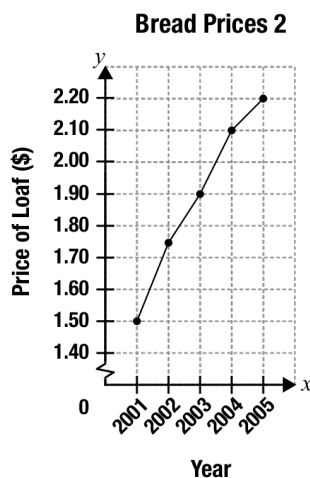
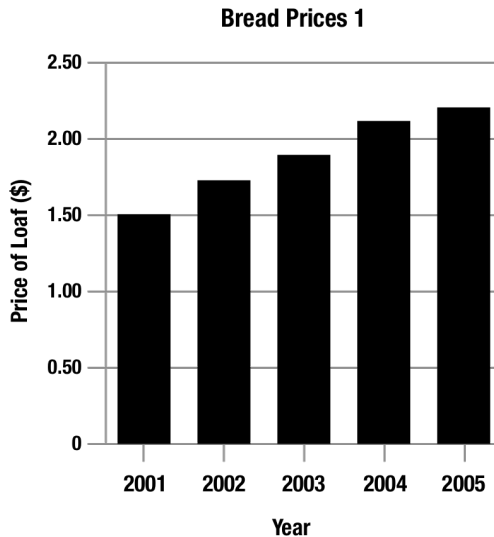
164 cm
168 cm
178 cm
180 cm
180 cm

What is the mean height of the five starting players?

- F 138 cm
- G 174 cm
- H 178 cm
- J 180 cm

GRADE SIX EQAO QUESTIONS: Data Management and Probability

- 32 The two graphs below show the same data about the mean price of a loaf of bread for each year during the last 5 years.



Graph 1 appears to show that the price of a loaf of bread has not increased much during the 5 years. Graph 2 appears to show that the price of a loaf of bread has increased by a large amount during the 5 years.

Which parts of the graphs are **most** important in making the graphs appear to show two different things?

- F the years
- G the scales
- H the types
- J the titles

GRADE SIX EQAO QUESTIONS: Data Management and Probability

28 Kyla is a member of the starting lineup of the school's basketball team. The heights of the other starting players are shown below.

160 cm, 156 cm, 148 cm, 147 cm

The mean height of the starting lineup is 152.4 cm. What is Kyla's height?

Show your work.

Kyla's height is _____.

GRADE SIX EQAO QUESTIONS: Data Management and Probability

Spring 2008

- 11** Maddie's and Lisa's scores on 5 math quizzes are shown in the table below.

Math Scores out of 30

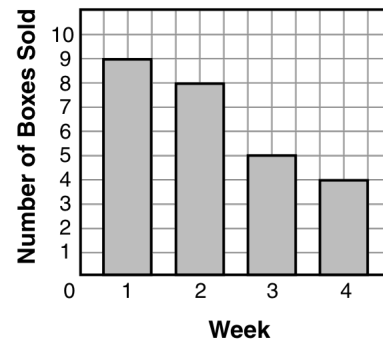
Maddie's scores	20	23	28	21	23
Lisa's scores	21	22	26	25	26

According to the data in the table, Maddie's mean score is

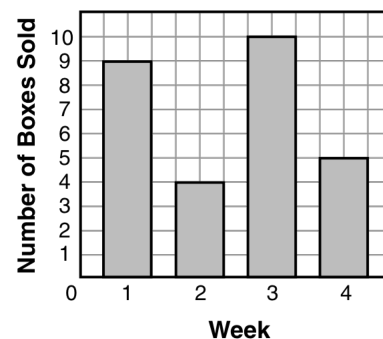
- a lower than Lisa's mean score.
- b the same as Lisa's mean score.
- c higher than Lisa's median score.
- d the same as Lisa's median score.

- 36** The graphs below show the popcorn sales for Simon and Henry.

Simon's Popcorn Sales



Henry's Popcorn Sales



According to the information in the graphs, Henry sold

- a fewer boxes than Simon in Week 1.
- b twice as many boxes as Simon in Week 2.
- c twice as many boxes as Simon in Week 3.
- d the same number of boxes as Simon in Week 4.

GRADE SIX EQAO QUESTIONS: Data Management and Probability

29 Jason plays on his school's basketball team. The table below shows the number of points Jason scores in the first 9 games of the season.

Jason's Points

Game	Points
1	8
2	6
3	8
4	6
5	10
6	35
7	10
8	8
9	8

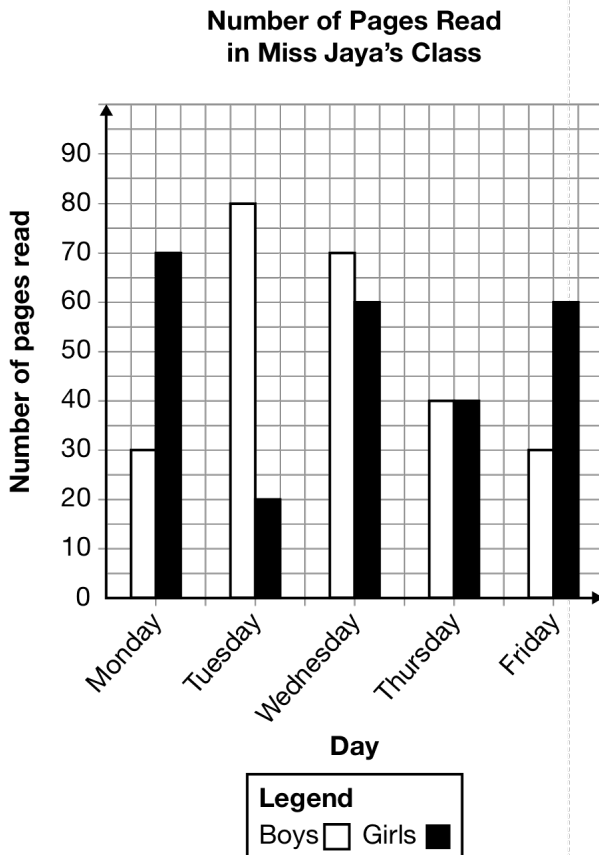
Explain why the mean does not truly represent Jason's usual performance.

Explain your thinking.

GRADE SIX EQAO QUESTIONS: Data Management and Probability

Spring 2009

- 11** The bar graph shows the number of pages the boys and girls in Miss Jaya's class read in one week. EDMETS140

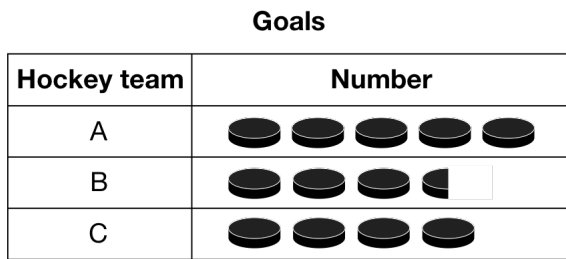



Which conclusion can be made about the number of pages read?

- a The boys read more pages than the girls during this week.
- b The girls read more pages than the boys during this week.
- c The students read more pages on Tuesday than on Monday.
- d The boys and the girls read the same number of pages during this week. *

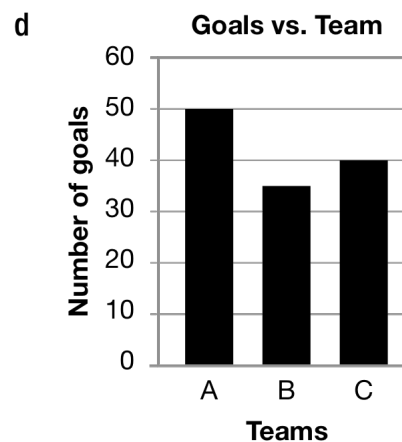
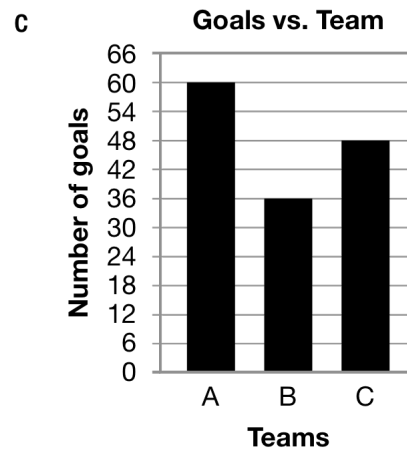
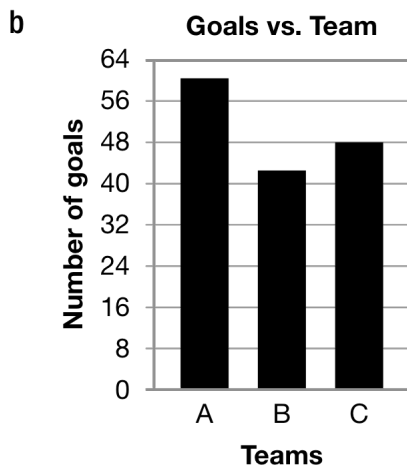
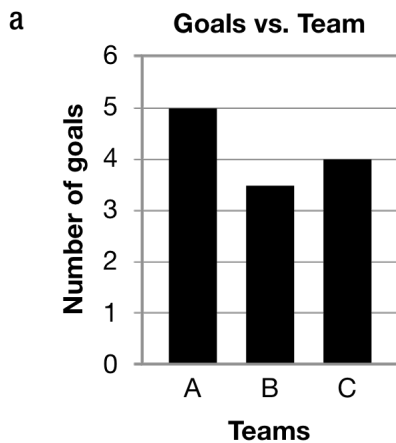
GRADE SIX EQAO QUESTIONS: Data Management and Probability

13 The pictograph below shows the number of goals scored by three hockey teams.



Key	
Each 	represents 12 goals.

Which bar graph represents the data shown in the pictograph?



GRADE SIX EQAO QUESTIONS: Data Management and Probability

- 36** Judith records the amount of rainfall at her school for one week.

Amount of Rainfall

Day	Amount of rainfall (mm)
Sunday	20
Monday	18
Tuesday	0
Wednesday	22
Thursday	30
Friday	25
Saturday	25

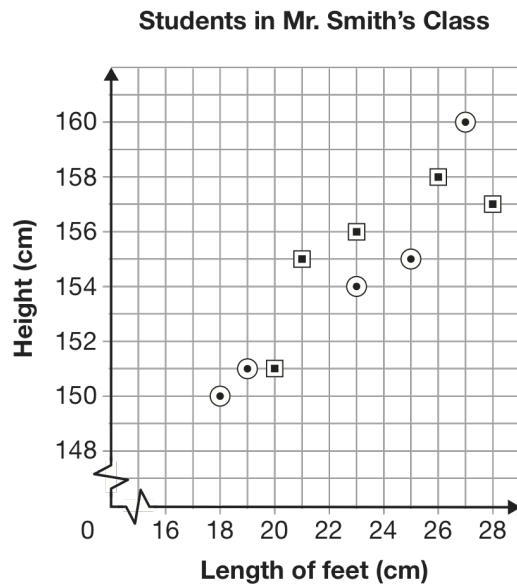
What is the mean amount of rainfall for the week?

- a 20 mm
- b 22 mm
- c 23 mm
- d 25 mm

GRADE SIX EQAO QUESTIONS: Data Management and Probability

Spring 2010

- 11** Ten students in Mr. Smith's class record their height and the length of their feet. The graph below displays these data.



Key	
○	represents a boy
□	represents a girl

Which conclusion can be drawn from the data?

- a A boy has the longest feet.
- b A girl has the smallest feet.
- c Taller students tend to have smaller feet.
- d Shorter students tend to have smaller feet.

GRADE SIX EQAO QUESTIONS: Data Management and Probability

- 13** Mr. Christy records the number of sit-ups the students in his class can do in one minute. The table below shows the results for 8 students.

Mr. Christy's Class

Name	Number of sit-ups
Caleb	23
Mireille	34
Jochen	43
Pavel	22
Abdul	43
Sebastian	32
Marina	23
Yusef	33

Which stem-and-leaf plot displays the same data?

- a** **Number of Sit-ups**

Stem	Leaf
2	2 3
3	2 2 3 4 4
4	4

- b** **Number of Sit-ups**

Stem	Leaf
2	2 3
3	2 3 4
4	3

- c** **Number of Sit-ups**

Stem	Leaf
2	2 3 3
3	3 3 4
4	3 4

- d** **Number of Sit-ups**

Stem	Leaf
2	2 3 3
3	2 3 4
4	3 3

GRADE SIX EQAO QUESTIONS: Data Management and Probability

36 The pictograph below shows the number of students who ride the bus to school.

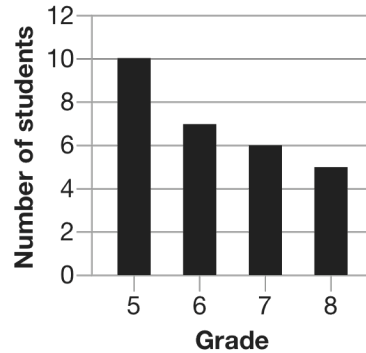
Students Riding the Bus

Grade	Number of students
5	XXXXXXXXXX
6	XXXXXXXX
7	XXXXXX
8	XXXXX

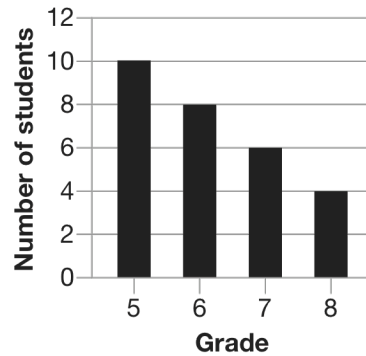
Key
Each X represents 5 students.

Which bar graph represents the same data?

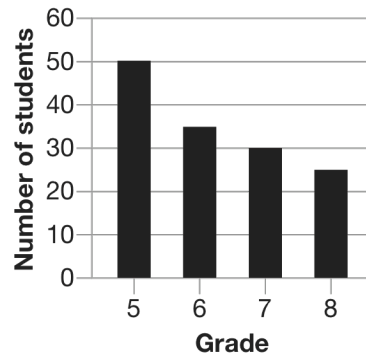
a Students Riding the Bus



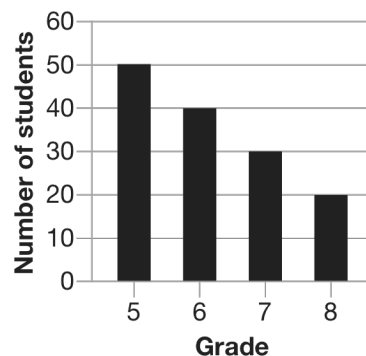
b Students Riding the Bus



c Students Riding the Bus



d Students Riding the Bus



GRADE SIX EQAO QUESTIONS: Data Management and Probability

9 Eric and Todd take 4 science tests. The table below shows Eric's 4 scores and 2 of Todd's scores.

Science Test Scores

Student	Test 1	Test 2	Test 3	Test 4	Mean test score
Eric	86	79	85	82	
Todd		85		89	

Todd's mean for the four tests is five points higher than Eric's. Complete the table above by entering Todd's mean test score and possible scores for his Test 1 and Test 3.

Justify your answers.

GRADE SIX EQAO QUESTIONS: Data Management and Probability

Overall Expectation #3:

- Determine the theoretical probability of an outcome in a probability experiment, and use it to predict the frequency of the outcome

Spring 2006

- 13** To pick teams, the gym teacher puts the names of 8 boys and 6 girls in a bag, as shown below. The table shows the names.



Boys	Girls
Robert	Jessica
Ivan	Sarah
Hasan	Preija
Mohamed	Minon
Salvatore	Sunetra
Kieran	Ling
Paul	
Manuel	

The first 3 names picked at random from the bag were Paul, Jessica and Sarah. The names are not put back in. What is the probability that the next name picked at random will be a boy?

- a $\frac{1}{2}$
- b $\frac{7}{11}$ *
- c $\frac{1}{7}$
- d $\frac{8}{14}$

- 36** Chloe's parents are buying a car. They want to pick 1 colour at random from 4 possible car colours. Which of the following methods should they use?

- a Flip a coin.
- b Toss a 6-sided number cube with 1 through 6 on the faces.
- c Use a spinner with 4 equal-sized sections labelled with the 4 possible colours. *
- d Pick one card from 10 cards with 1 of the 4 colours written on each face.

GRADE SIX EQAO QUESTIONS: Data Management and Probability

10 A spinner has 12 equal-sized sections. The sections are labelled 1 through 12.

What is the probability that Frieda will spin a multiple of 3 on her first spin?

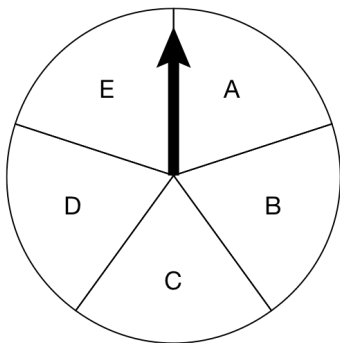
Explain how you know.

The probability is _____.

GRADE SIX EQAO QUESTIONS: Data Management and Probability

Spring 2007

- 11** Sara draws the spinner shown below. It is divided into 5 equal sections.



If Sara spins the arrow 50 times, how many times should she expect the arrow to land on section E?

- A 5
- B 10
- C 25
- D 45

- 33** Jane has a package of 40 cards: 30 of the cards are red and 10 of the cards are black. If Jane randomly picks 8 cards, how many cards should she expect to be red?

- A 2
- B 4
- C 6
- D 8

GRADE SIX EQAO QUESTIONS: Data Management and Probability

7 Lori has a bag of 24 gumballs. She takes 8 gumballs from the bag without looking. The colours of the 8 gumballs Lori takes from the bag are 4 red, 3 blue and 1 yellow.

Using the colours of the gumballs Lori takes from the bag, predict how many gumballs of each colour were in the bag to start.

Explain your thinking.

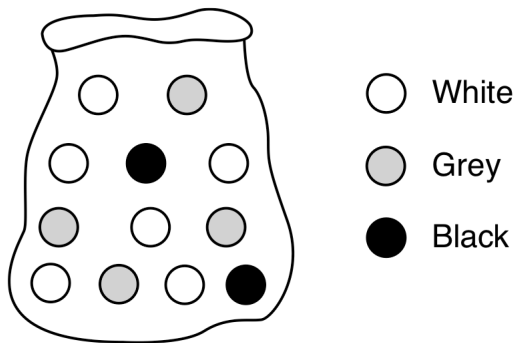
GRADE SIX EQAO QUESTIONS: Data Management and Probability

Spring 2008

12 Which of the following represents the probability of an event that is very likely to occur?

- a 0
- b 0.15
- c 0.85
- d 1

35 A bag contains 12 marbles.



If Angelina picks one marble from the bag without looking, what is the probability that she will pick a black marble?

- a $\frac{1}{12}$
- b $\frac{1}{6}$
- c $\frac{1}{3}$
- d $\frac{1}{2}$

GRADE SIX EQAO QUESTIONS: Data Management and Probability

9 The faces of a number cube are labelled 1, 2, 2, 3, 4 and 5. The number cube is rolled 114 times.

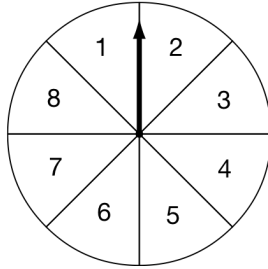
- How many times would you expect the number 2 to appear?

Justify your answer.

GRADE SIX EQAO QUESTIONS: Data Management and Probability

Spring 2009

12 The spinner below has 8 equal-sized sections.



The spinner is spun one time. What is the probability that the arrow will land in a section with a number greater than 3? EQAO10211

- a 0.125
- b 0.250
- c 0.625 *
- d 0.750

35 A class records the colour of the cars that drive past the school in a short period. These data are shown in the table below. EQAO21032

Car Colour

Colour	Number of cars
Black	2
Blue	3
Grey	1
Red	3
White	1

Based on these data, if 40 cars drive past the school, how many cars could be expected to be blue?

- a 3
- b 10
- c 12 *
- d 30

GRADE SIX EQAO QUESTIONS: Data Management and Probability

8 Keenan places 3 green marbles, 4 yellow marbles and 1 blue marble in a bag. EQAO20119

Keenan then adds 1 green marble and 1 yellow marble to the bag.

Does the probability that Keenan will randomly choose a yellow marble increase, decrease or stay the same?

Circle one: Increases Decreases Stays the same

Justify your answer.

GRADE SIX EQAO QUESTIONS: Data Management and Probability

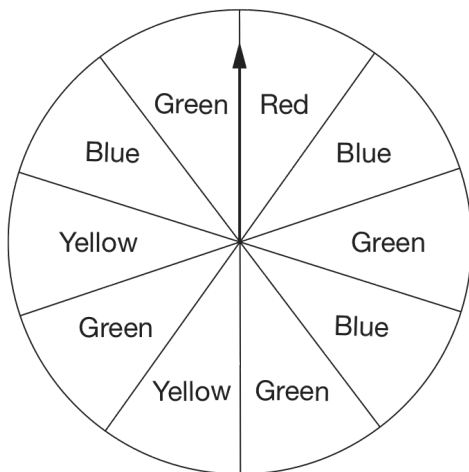
Spring 2010

12 The faces on a fair number cube are labelled 1, 2, 3, 4, 5 and 6. Steven rolls the number cube 48 times.

How many times should Steven expect to roll a 3?

- a 3
- b 8
- c 16
- d 24

35 The spinner below has 10 equal sections.



On which colour will the arrow land with a probability of 0.2?

- a red
- b blue
- c green
- d yellow

GRADE SIX EQAO QUESTIONS: Data Management and Probability

27 Farzad puts the following 10 cards into a bag.

A S S E S S M E N T

Farzad randomly selects one card, records the result and puts the card back into the bag. If he does this 500 times, how many times is it likely that he will select a card with a vowel (A, E, I, O, U)?

Justify your answer.