Mental Math

Grade 9 Mathematics (10F)

G–1

Substrand: Data Analysis **Specific Learning Outcome: 9.SP.2**

General Questions	Answers
1. You buy a shirt for $16 and shoes for $32. What is the total cost?	$48
2. Your school planned a waterskiing trip and 10% of the 20 students in your class attended. How many students does that represent?	2 students
3. What is the greatest common divisor between 4, 8, and 12?	4
4. Calculate: $4 \times 14 \times 25$	1400
5. Express $\dfrac{49}{8}$ as a mixed number.	$6\dfrac{1}{8}$
6. Divide $45 equally among 3 people. How much will each person receive?	$15

Unit Questions	
7. The part of a population that represents the whole population is called _____.	a sample
8. A collection of data received from an entire population is called _____.	a census
9. If each member of a population has an equal chance of being chosen from a sample, the sample is _____.	random
10. A factor that can prevent a sample from representing a population is called _____.	bias

Other Questions	
11.	
12.	

Mental Math

Grade 9 Mathematics (10F)

G–2

Substrand: Data Analysis   **Specific Learning Outcome: 9.SP.1**

General Questions	Answers
1. Calculate 5% GST on $16.	$0.80
2. If the balance of your chequing account is $74 and you deposit $30, what is the new balance of your account?	$104
3. How many centimetres are there is 4.5 metres?	450 cm
4. Add: $\frac{1}{8}$ and $\frac{1}{2}$	$\frac{5}{8}$
5. How many minutes elapse between 8:00 a.m. and 11:30 a.m.?	210 minutes
6. Ten students out of 25 are missing from class. Express this as a percent.	40%
Unit Questions	
7. If you decide to interview 10% of 35 000 people, how many people will you interview?	3500 people
Name three effects that may be potential problems for data collection.	
8. _____ 9. _____ 10. _____	bias, language, ethics, cost, time, confidentiality, and cultural difference
Other Questions	
11.	
12.	

Mental Math
Grade 9 Mathematics (10F)

G–3

Substrand: Data Analysis	Specific Learning Outcome: 9.SP.1

General Questions	**Answers**
1. Evaluate: $-92 + 4$	-88
2. Write an expression that represents 5 less than n.	$n - 5$
3. If Julie spends 20 minutes on the bus getting to school, how many minutes does she spend on the bus in a typical week?	100 minutes
4. Add: $\dfrac{1}{2} + \dfrac{3}{4}$	$\dfrac{5}{4}$ or $1\dfrac{1}{4}$
5. What is the area of a rectangular classroom that measures 10 m by 12 m?	120 m^2
6. In your class of 20 students, 60% received a mark of 80% on a test. How many students does this represent?	12 students

Unit Questions	
For each statement, identify a factor that could influence the collection of data.	
7. The person does not understand what is required.	language
8. The person must answer all the questions.	privacy
9. The person must answer questions at noon exactly.	timing
10. The question implies a preference for a certain product.	bias

Other Questions	
11.	
12.	

Mental Math

Grade 9 Mathematics (10F)

G–4

Substrand: Data Analysis **Specific Learning Outcome: 9.SP.1**

General Questions	Answers
1. What is the square of 8?	64
2. What is one-half of 5.2?	2.6
3. If you get $\dfrac{17}{20}$ on a mathematics test, what is your mark as a percentage?	85%
4. If Nadia earns $85 per week, how much money will she make for 2 weeks of work?	$170
5. If you have six 25¢ pieces, and fourteen 10¢ pieces, how much money do you have?	$2.90
6. Evaluate: 0 ÷ 10	0

Unit Questions	
Identify a factor that may influence the collection of data.	
7. Asking teenagers what clothes they bought in a high-end retail store.	high cost
8. Asking someone to give their telephone number.	confidentiality
9. A vendor asks you about the income of your parents.	confidentiality
10. The survey is intended solely for those who live in Winnipeg.	cultural difference

Other Questions	
11.	
12.	

Mental Math

Grade 9 Mathematics (10F)

G–5

Substrand: Data Analysis   **Specific Learning Outcome: 9.SP.1**

General Questions	Answers
1. A can of paint can cover an area of 3.2 m², which is 20% of the area to be painted. How many cans of paint are needed to paint the whole surface?	5 cans
2. Write $5\frac{2}{5}$ as a decimal.	5.4
3. How many centimetres are equivalent to 23 mm?	2.3 cm
4. What percentage of time is represented by the last 30 minutes of a 2-hour film?	25%
5. With twelve $5 bills, how much money do you have?	$60
6. What is the total cost of 3 chocolate bars at 99¢ each?	$2.97
Unit Questions	
7. Name two factors that may cause a surveyor to use a sample rather than a population.	expensive, time consuming, human resources needed
8. To determine students' favourite course, a fine arts class was surveyed and 90% of the students indicated that art was their favourite course. What is a factor that may influence the data?	bias
9. Did question 8 use a sample or a population?	sample
10. In Ontario, 35% of secondary students are vegetarians. What population is the focus of the survey?	students in secondary school in Ontario
Other Questions	
11.	
12.	

Mental Math

Grade 9 Mathematics (10F)

G–6

Substrand: Data Analysis

Specific Learning Outcome: 9.SP.1

General Questions	Answers
1. If $\frac{3}{4}$ of 16 students have brown eyes, how many students have brown eyes?	12 students
2. Write $1\frac{1}{4}$ in decimal form.	1.25
3. If two angles of a triangle measure 15° and 70°, what is the third angle measurement?	95°
4. If you make a purchase of $7.40 and pay with a $10 bill, how much change will you receive?	$2.60
5. How many kilometres can you drive in 8 hours going 90 km/hour?	720 km
6. Evaluate: $2^2 + 3^2 + 4^2$	29

Unit Questions	
7. Why is a census **not** done every year?	expensive, time consuming
8. Veronica asks questions of random people she meets at the mall. Are these people a sample or a population?	sample
9. Name a disadvantage of Veronica's questioning technique.	there may be neighbourhood bias
10. If Veronica poses her questions only to teenagers, what problems might she have with the data?	the data may be biased toward a specific age group

Other Questions	
11.	
12.	

Mental Math

Grade 9 Mathematics (10F)

G–7

Substrand: Data Analysis   **Specific Learning Outcome: 9.SP.2**

General Questions	Answers
1. Express $\dfrac{9}{10}$ as a percentage.	90%
2. If tickets are $20, how many can you buy with $2000?	100 tickets
3. If you want to leave a 10% tip on your $39.81 bill, estimate the total of your bill with the tip.	≈ $44
4. Evaluate: $5 + 7 \times 9$	68
5. If Mario Lemieux was born in 1965, what age was he when he scored 89 goals in 1989?	≈ 24 years
6. How many hours is a 150-minute movie?	2.5 hours

Unit Questions	
Determine the sample type described in questions 7 to 10.	
7. Choosing an individual or group because it is easy to question them is a _____.	convenience sample
8. When individuals volunteer to answer a survey it's a _____.	voluntary sample
9. A _____ is used when we take one person for every "n" people in an ordered list of a population.	systematic sample
10. When selecting all individuals from a group we are sampling a _____.	population

Other Questions	
11.	
12.	

Mental Math

Grade 9 Mathematics (10F)

G–8

Substrand: Data Analysis

Specific Learning Outcome: 9.SP.2

General Questions	Answers
1. Leo read 82 pages of a 200-page novel. How many pages are left?	118 pages
2. A 13% tax is charged on a $20 movie. How much money will you pay in tax?	$2.60
3. It is 4:00 p.m. What is the angle between the clock hands?	120°
4. What is the perimeter of a rectangular desk that measures 80 cm by 70 cm?	300 cm
5. Estimate the sale price of a $50.30 book after a 10% discount.	≈ $45
6. Multiply: 300×20	6000

Unit Questions	
Identify the sampling technique used to gather information about students in a high school.	
7. You ask one person in five passing through the hallway.	systematic
8. You ask all your friends.	convenience
9. You ask those who put up their hand when you ask a question.	voluntary
10. You ask 10 random students from each grade in the school, 5 girls and 5 boys.	stratified

Other Questions	
11.	
12.	

Mental Math

Grade 9 Mathematics (10F)

G–9

Substrand: Data Analysis

Specific Learning Outcome: 9.SP.2

General Questions	Answers
1. If $\frac{4}{5}$ of the student population goes to school by bus, what percentage is this?	80%
2. Jessica has $128 in her savings account, but withdraws $60. What is the new balance?	$68
3. How many hours are equivalent to 240 minutes?	4 hours
4. Evaluate: $3 \times 2 + 4 \div 2$	8
5. If you travel at a speed of 20 km for 3 hours, how far did you travel?	60 km
6. Reduce the fraction $\frac{10}{12}$.	$\frac{5}{6}$

Unit Questions	
Jason, a member of the Graduation Committee, asked every third student who entered the cafeteria the following question, "What should be the colour of the cafeteria walls?"	
7. Identify the population.	school members
8. Identify the sample.	students who use the cafeteria
9. Identify the sampling technique.	systematic sample
10. The sampling technique is valid. True or false?	True

Other Questions	
11.	
12.	