



BRITISH
COLUMBIA

Essentials of Mathematics 10

August 2005 Examination

Student Booklet Form A

Student Instructions

1. Ensure that in addition to this **Student Booklet**, you have a **Data Booklet** and a **Response Form**.
2. **Disqualification** from the examination will result if you bring books, paper, notes, or unauthorized electronic devices into the examination room.
3. This examination is designed to be completed in **two hours**. *Students may, however, take up to 30 minutes of additional time to finish.*
4. At the end of the examination, return this **Student Booklet**, the **Data Booklet** and the **Response Form** to the supervisor.

ESSENTIALS OF MATHEMATICS 10 PROVINCIAL EXAMINATION

INSTRUCTIONS

1. All answers must be entered on the Response Form using an **HB pencil**. Answers entered in this examination booklet will **not** be marked.
2. A **Data Booklet** is provided. It contains bank account information, a sales taxes in Canada map, partial tables for CPP, EI, Provincial and Federal tax, a table of conversions, the three basic trigonometric ratios, area formulae, and surface area and volume formulae. *Rough Work for Graphing* and *Rough Work Space* are located at the back of the examination.
3. Use the value of π programmed in your calculator rather than the approximation of 3.14.
4. When using the calculator, rounding should occur **only in the final step** of the solution.
5. The provincial examination consists of 60 questions worth one mark each. There are **four** types of questions:
 - 4 True-and-False Questions
 - 12 Matching Questions
 - 8 Numerical-Response Questions
 - 36 Multiple-Choice Questions**60 Total**
6. When answering **Numerical-Response** questions, please note the following:

- Find the correct question number on the Response Form and write your answer in the spaces provided, noting proper place value. **Only one digit per box.**
- PRINT your digits **as shown below**. Keep within the box provided.

0	1	2	3	4	5	6	7	8	9
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- Negative answers must include a shaded negative circle. If neither circle is bubbled, the answer will be read as positive.
- Leave unused boxes blank.
- For example, the answer **-70.6** will be written as shown.

+	-		7	0	.	6	
<input type="radio"/>	<input checked="" type="radio"/>						

You have **Student Booklet Form A**. In the box above #1 on your **Response Form**, fill in the bubble as follows, if it is not already filled in.

Student Booklet/ Cahier d'examen	A	B	C	D
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

1. What does PIN represent?
 - A. Private Input Number
 - B. Personal Input Number
 - C. Private Identification Number
 - D. Personal Identification Number

2. On Sept. 1, 2003, Rick Johnson receives a bill for \$65.00. The **next day** he fills out a withdrawal slip for that amount.

B BANK OF EVERMORE Blue Harbour, B.C.		Withdrawal	
Date I <i>Sept. 2, 2003</i>	Your Home Branch Location II <i>Blue Harbour</i>		
Received from Bank of Evermore III <i>65.00</i>	<i>/100 dollars</i>	\$ <i>65.00</i>	IV
Your Account Number <i>345-234-67</i>	Signature (Please sign in the presence of bank employee) V <i>Rick</i>		

Which portions of the withdrawal slip are filled out incorrectly?

- A. I, II
- B. III, V
- C. I, III, V
- D. V, IV, III

Use the following information to answer question 3.

Transaction Record				
Date	Withdrawal	Deposit	✓	Balance
				479.78
<i>Aug. 6</i>	<i>117.50</i>			
<i>Aug. 7</i>	<i>98.50</i>			
<i>Aug. 10</i>		<i>201.60</i>		
<i>Aug. 15</i>	<i>12.50</i>			
<i>Aug. 19</i>	<i>36.72</i>			
<i>Aug. 21</i>		<i>10.60</i>		

3. What is the balance on Aug. 21st?

- A. \$2.45
- B. \$426.76
- C. \$532.89
- D. \$957.89

4. Bank A charges 5% interest while Bank B charges a flat rate of \$25.00 for an overdraft account. What amount must be overdrawn for the charges from Bank A to equal the charges from Bank B? (Round answer to the nearest dollar.)

Record your answer neatly on the Response Form.

Use the following information to answer questions 5 to 7.

Account Number: 910683

Deposited in the Yourtown Savings Bank

Date: April 2, 19 75

For Credit Account of
Name: Lucy Schwartz

Please advise of any change of address.

	Dollars	Cents
Bills	125	00
Coin	5	50
Cheques	7	89
	10	98
Total Cheques <i>(Cheques are credited subject to collection.)</i>	20	40
Total Deposit		

For credit to the account of: <u>Steven's TV Service</u>	Cash	Dollars	Cents
		83.	00
	Cheques List seperately	1	21. 15
		2	52. 40
		3	
		4	
		5	
Account No. <u>11 005 559308</u>			
Date <u>April 3,</u> 19 <u>75</u>			
Alltown Bank	Chequing Account Deposit Ticket	Total	156. 55

**Match each Question on the left with the correct Answer on the right.
Each Answer may be used once, more than once or not at all.**

Question	Answer
5. How much cash did Lucy deposit?	A. Lucy's
6. How much money was deposited in cheques by Steven's TV Service?	B. \$73.55
7. Which of the two deposit slips was filled out incorrectly?	C. \$130.50
	D. \$125.00
	E. \$52.40
	F. Steven's

8. At most, how many transactions can be made on Account B for it to be cheaper than Account A?

Account A	Account B
<ul style="list-style-type: none">• \$18.95 per month• unlimited no-cost transactions	<ul style="list-style-type: none">• \$6.95 per month• 8 free transactions• \$0.50 for each additional transactions

- A. 5
B. 24
C. 31
D. 32

9. Johnny worked from 11:00 a.m. to 3:45 p.m. How would this be expressed using the 24-hour clock?
- A. 11:00 – 13:45
B. 11.00 – 13.75
C. 11:00 – 15:45
D. 11.00 – 15.75

**REFER TO
DATA BOOKLET**

Use Tax Deduction Tables in the Data Booklet to answer question 10.

10. James earns \$343.95 weekly. Use the deduction tables provided; CPP, EI, BC and Federal taxes, to find his net weekly income. Use claim code 2.
- A. \$251.84
B. \$285.34
C. \$289.09
D. \$398.81

11. Taxable income can be greater than gross income.

- A. Statement is always true.
- B. Statement is sometimes true.
- C. Statement is never true.

12. John will receive a $3\frac{1}{2}\%$ increase in his hourly rate of pay which is currently at \$12.31 per hour. What will his new hourly rate be? (Answer in dollars and cents.)

Record your answer neatly on the Response Form.

13. Monthly expenses on a new house are \$1500. The bank will only lend money to the buyer if his monthly expenses are less than 32% of his monthly salary. What would the minimum yearly salary be to qualify for this mortgage?

- A. \$4 687.50
- B. \$5 760
- C. \$48 000
- D. \$56 251

14. Kyle is paid an hourly wage of \$12.00 for a 36-hour week and time-and-a-half for overtime. What is his gross pay for one week during which he worked 41 h?

- A. \$432.00
- B. \$492.00
- C. \$522.00
- D. \$552.00

15. Ravi's goal is to save \$320. She saves 15% of her biweekly pay cheque of \$625. How many paycheques will it take her to reach her goal?

- A. 2
- B. 3
- C. 4
- D. 5

16. How many cell values are added in the spreadsheet formula = **sum (A7:A10)**?

- A. 3
- B. 4
- C. 7
- D. 19

17. How many cells show values?

	A	B	C
1	Hours	Rate	Pay
2	8	8.50	= A2 * B * 2
3	7	9.25	= A3 * B * 3
4	6	10	= A4 * B * 4

- A. 3
- B. 6
- C. 9
- D. 10

18. What is a possible formula for cell D2?

	A	B	C	D	E
1	Length	Width	Area	Perimeter	
2	5	7	35		
3	8	3	24		
4	4	9	36		
5	6	8	48		
6					

- A. = A2 * B2
- B. = 2 * A2 + 2 * B2
- C. = C2 - B2 - A2
- D. = A2 + B2

**REFER TO
DATA BOOKLET**

Use the Sales Taxes in Canada Map in the Data Booklet to answer question 19.

	A	B	C	D	E
1	Bolt Type	Quantity	Price	Amount	
2	$\frac{1}{4}$ inch	42	\$0.06		
3	$\frac{1}{2}$ inch	26	\$0.16		
4	1 inch	16	\$0.18		
5					
6	Subtotal				
7	PST				
8	GST				
9	Total				

19. A hardware store uses a spreadsheet to determine its daily sales of bolts. What would the value be in cell D9 if this hardware store was located in Alberta? (Answer in dollars and cents.)

Record your answer neatly on the Response Form.

20. What are the advantages of using computerized spreadsheets over paper-and-pencil techniques when completing tables requiring calculations?
- A. Spreadsheets do not make arithmetic errors.
 - B. Spreadsheets can perform more calculations in less time.
 - C. Spreadsheets automatically recalculate if the numbers in the cells are changed.
 - D. All of the above.

**REFER TO
DATA BOOKLET**

Refer to the Sales Taxes in Canada Map in the Data Booklet to answer question 21.

	A	B	C	D	E	F	G	H	I	J
1	Item	Price (\$)	Quantity		Total (\$)					
2	T-shirt	15.99	20		319.80					
3	Shorts	23.99	12		287.88					
4	Socks	6.99	30							
5				Subtotal						
6				GST						
7				PST						
8				Total	874.60					

21. These items were purchased in Alberta.
- A. Statement is always true.
 - B. Statement is sometimes true.
 - C. Statement is never true.

22. Misuzu purchased 50 chocolate bars for \$19.50. What is the unit price?
- A. \$0.39
 - B. \$2.56
 - C. \$19.50
 - D. \$30.50

Use the following coupon to answer question 23.

Free Entrée
Breakfast, Lunch or Dinner
Purchase any entrée and two beverages
from our regular menu, and receive a
second entrée of equal or lesser value,
FREE (up to an \$8 value)
Valid Every Day, Anytime

23. Todd and his girlfriend ordered the following items at Barb's restaurant in Langley, BC.

1	Clubhouse Sandwich	\$7.95
1	Chicken Quesedilla	\$6.95
1	Large Coke	\$1.75
1	Medium Coffee	\$1.25

If they used the coupon above, what was the total bill including GST?

- A. \$9.95
- B. \$10.65
- C. \$10.95
- D. \$11.72

Match each Ratio on the left with the correct Reduced Fraction on the right.
Each Fraction may be used once, more than once or not at all.

Ratio	Reduced Fraction
24. 14 to 21	A. $\frac{28}{42}$
25. 24 : 100	B. $\frac{2}{3}$
26. $\frac{133}{33}$	C. $\frac{6}{25}$
	D. $\frac{12}{50}$
	E. $\frac{133}{33}$
	F. $\frac{13}{3}$

**REFER TO
DATA BOOKLET**

Use the Sales Taxes in Canada Map in the Data Booklet
to answer question 27.

27. The price of a computer is \$2495 plus taxes. How much money will be saved if the computer is purchased in Calgary, AB instead of Montreal, QC?
(Express your answer in dollars and cents.)

Record your answer neatly on the Response Form.

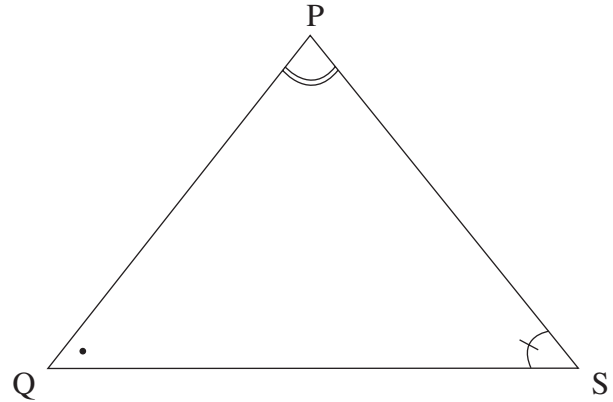
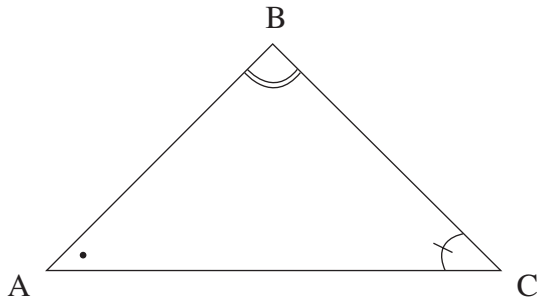
28. Jackie found a shirt on sale for \$18 off the original price of \$48. If she has to pay PST and GST in Quebec, how much change should she receive from a \$50 bill?
- A. \$15.65
 - B. \$15.80
 - C. \$17.75
 - D. \$17.90
29. Mary can buy 42 square feet of carpet for \$500. At this rate, which of the following proportions correctly shows the amount of carpet (c) she could purchase for \$350?
- A. $\frac{c}{42} = \frac{500}{350}$
 - B. $\frac{c}{350} = \frac{500}{42}$
 - C. $\frac{c}{350} = \frac{42}{500}$
 - D. $\frac{c}{500} = \frac{350}{42}$

**REFER TO
DATA BOOKLET**

**Use the Sales Taxes in Canada Map in the Data Booklet
to answer question 30.**

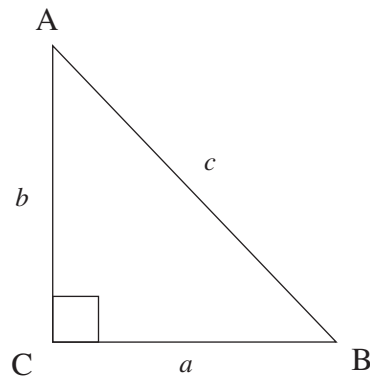
30. The ticket price of a DVD player in Alberta and Quebec is the same. If \$17.25 is saved by buying the DVD player in Alberta then what is the ticket price?
- A. \$119
 - B. \$129
 - C. \$230
 - D. \$246

31. $\triangle ABC$ is similar to $\triangle QPS$.



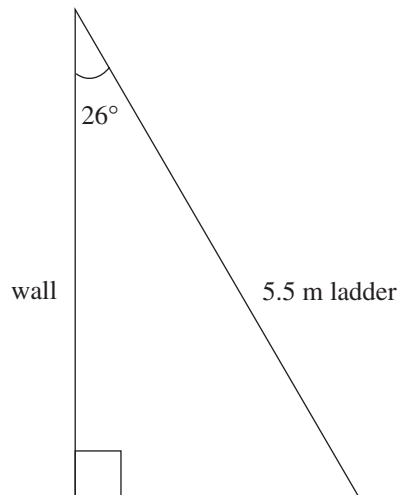
- A. True
- B. False

32. Given right triangle ABC with $a = 11$, $b = 12$, $c = 16.279$. Calculate $\sin A$.



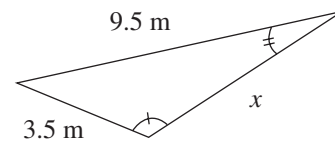
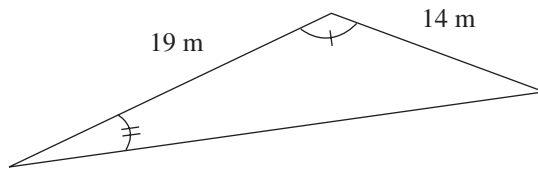
- A. 0.68
- B. 0.92
- C. 1.36
- D. 1.48

33. A 5.5 metre ladder is leaning against a wall. The angle formed by the ladder and wall is 26° . How far up the wall does the ladder reach?



- A. 2.41 m
- B. 2.68 m
- C. 3.72 m
- D. 4.94 m

34. The following two triangles are similar. What is the length of the missing side x in metres?
(Answer to two decimal places.)

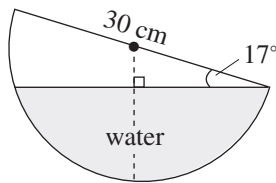


Record your answer neatly on the Response Form.

35. John is standing at a 5 m pole. He walks 12 m away from the pole. What is the angle of inclination? (Answer to the nearest degree.)

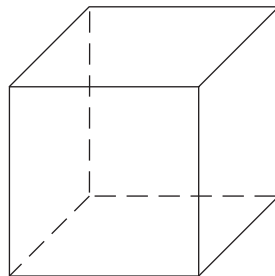
- A. 23
- B. 25
- C. 65
- D. 67

36. A bowl with a diameter of 30 cm contains water. It is tilted at an angle of 17° . How deep is the water in the bowl? (Round answer to the nearest tenth of a centimetre.)



- A. 4.4
- B. 10.6
- C. 14.3
- D. 15.0

37. How many edges are on the diagram?



- A. 6
- B. 8
- C. 9
- D. 12

38. A box of chocolates is 15 cm long, 9 cm wide, and 3 cm high. What is the volume of the box?
- A. 27 cm^3
 - B. 135 cm^3
 - C. 405 cm^3
 - D. 414 cm^3

Match each Measurement on the left with the correct Equivalent Measurement on the right. Each Equivalent Measurement may be used once, more than once or not at all.

Measurement	Equivalent Measurement
39. 12 inches	A. Two and two-thirds yards
40. 2 yards	B. One-third of a yard
41. 8 feet	C. Two and one-half feet
	D. Six feet
	E. One yard and 12 inches

42. The dimensions of a rectangle are 50 feet by 24 feet. If the area is doubled and the new width is 30 feet, what will the new length be in feet? (Answer to the nearest foot.)

Record your answer neatly on the Response Form.

43. A map uses a scale of 1.5 cm to 40 km. If the distance between two cities is actually 480 km, then how far apart on the map are the cities?
- A. 6 cm
 - B. 8 cm
 - C. 12 cm
 - D. 18 cm

44. Each figure below is made of 9 squares. Each square has an area of one square metre. Which figure has the greatest perimeter?

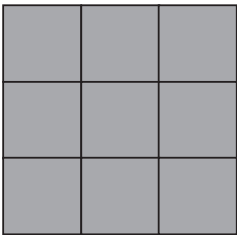


Figure 1

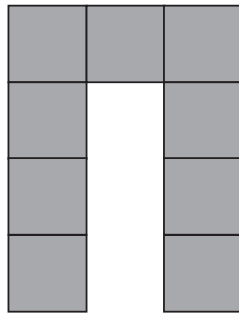


Figure 2

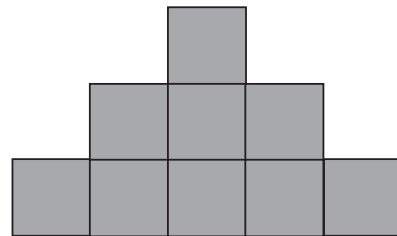
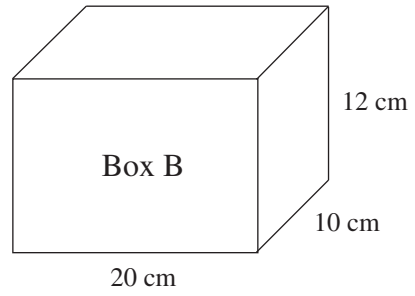
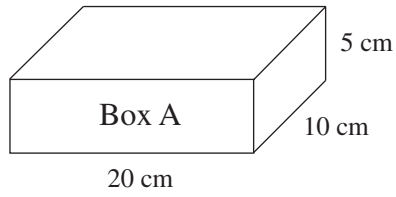


Figure 3

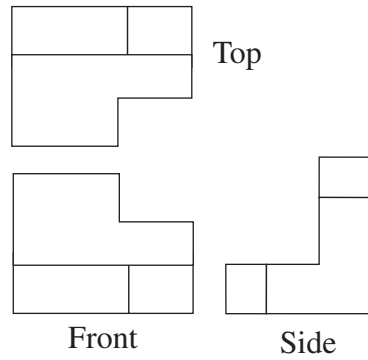
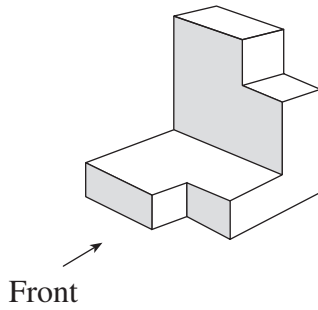
- A. Figure 1
- B. Figure 2
- C. Figure 3
- D. All have the same perimeter.

45. Facial tissue is sold in two different sizes. Box A contains 120 tissues.
How many facial tissues does Box B contain?



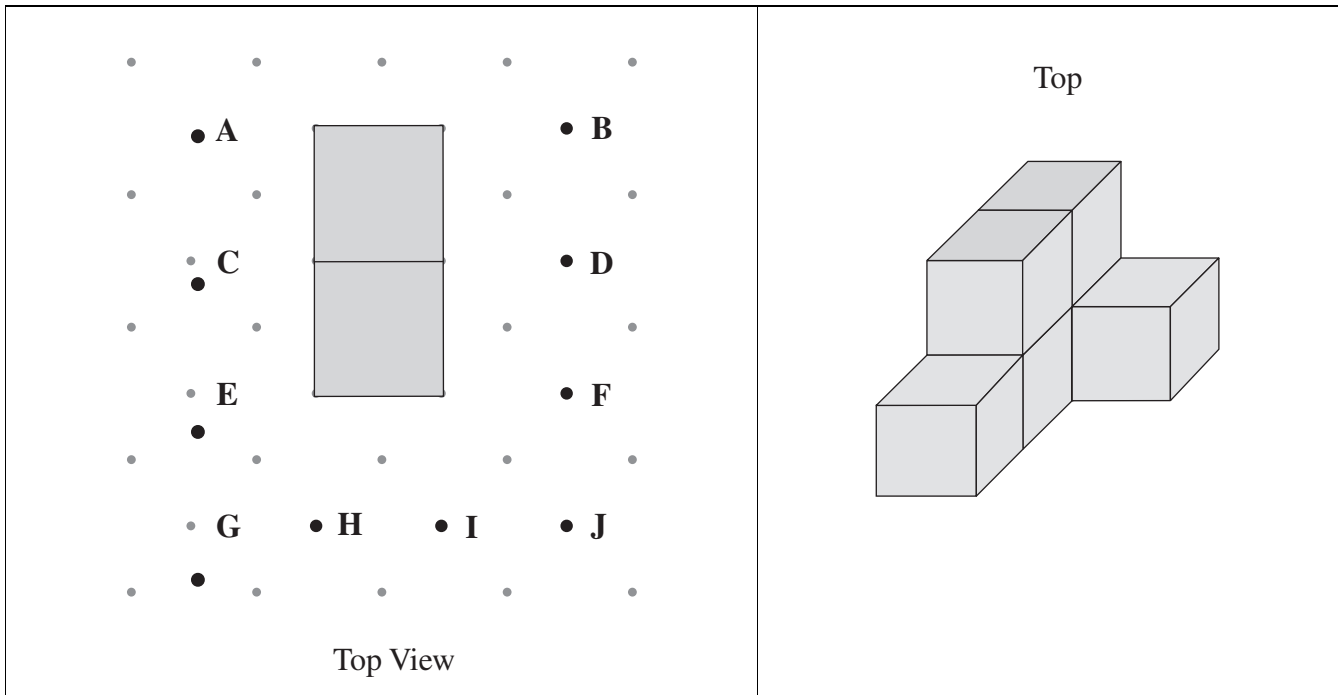
- A. 50
- B. 60
- C. 240
- D. 288

46. The three-view drawing on the right is a correct representation of the object on the left.



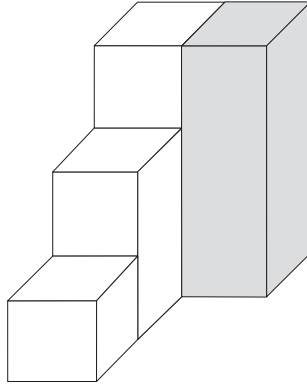
- A. True
- B. False

47. Which dots must be end points of lines to complete the top view of the adjacent figure?
 (Assume there is no rotation.)



- A. A, C, H, I
- B. B, D, H, I
- C. A, C, I, J, F
- D. D, F, H, I

Use the following diagram to answer question 48.



48. If the shaded 27 cm^3 rod is removed from this figure, how many cubic centimetres remain?

- A. 27
- B. 36
- C. 45
- D. 54

49. A jar has four red marbles and six blue marbles. What is the probability of drawing a red marble at random? (Answer in decimal form to one decimal place.)

$$P(A) = \frac{\text{number of favorable outcomes}}{\text{total number of possible outcomes}}$$

Record your answer neatly on the Response Form.

Match each Type of Sample on the left with the correct Method on the right.
Each Method may be used once, more than once or not at all.

Type of Sample	Method
50. simple random	A. every 20th name in a phone book
51. cluster	B. names picked from a hat
52. stratified random	C. one class from each grade
	D. everyone from a small group

53. Joan has a part-time job as a waitress. This week her tips were \$38.75, \$72.50, \$89.00, \$8.25, and \$54.55. What were her average daily tips?

- A. \$40.38
- B. \$52.61
- C. \$54.55
- D. \$263.05

54. Which one of the following is not a method of selecting a sample to represent a larger population?

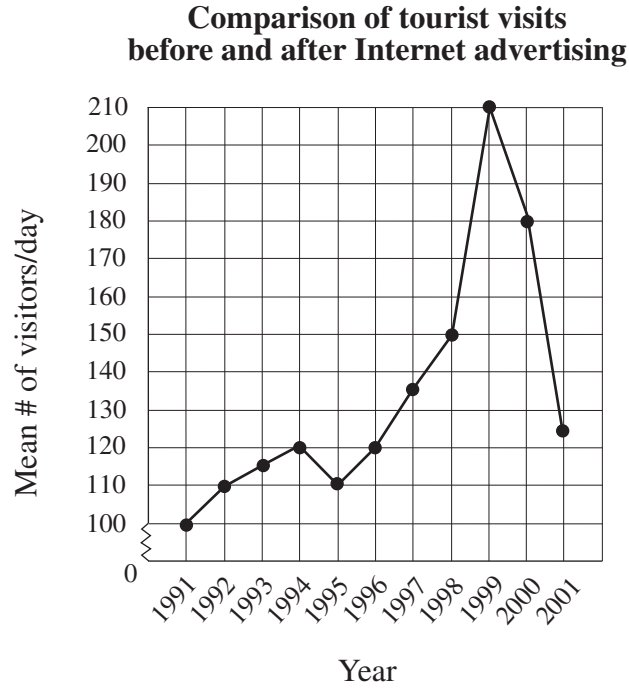
- A. Cluster
- B. Systematic
- C. Questionnaire
- D. Simple random

55. What would you need to know before you declared the following survey result fair and accurate?

“The minimum driving age should be raised to 18.”

- A. Who was asked?
 - B. How much did the survey cost?
 - C. Was the survey multiple-choice?
 - D. How many questions were asked?
56. In a survey of 240 high school students, $\frac{1}{4}$ were taking Life-Skills. Of those taking Life-Skills, $\frac{2}{3}$ were also taking Mathematics. How many students in the survey were **only** taking Life-Skills?
- A. 20
 - B. 40
 - C. 60
 - D. 100

57. A tourist information centre kept track of the number of people stopping by for information. In 1997, the town began promoting itself as a tourist destination on the Internet.



What is the mean number of visitors per day once Internet advertising was introduced?
(Round to the nearest whole number.)

Record your answer neatly on the Response Form.

58. The following were collected with a telephone survey of 1000 people. Each person was asked to name his or her favourite spectator sport.

Favourite Sport	Number
Hockey	450
Football	240
Baseball	120
Soccer	58
Volleyball	24
Other	108

In order to display this data on a circle graph, what is the size of the angle that represents the population whose favourite sport is baseball?

- A. 20.9°
B. 38.9°
C. 43.2°
D. 86.4°
59. Masa worked at the office for 5.5 h/d for six days. He was paid \$462 for this work. In addition, the company paid him \$12/h for working 18 h at home. What was Masa's mean (average) pay per hour?
- A. \$12.00
B. \$12.47
C. \$13.00
D. \$13.29

60. Every month for three years, a biologist has caught 30 fish and checked them for sea lice. Over the three years, she found 270 fish with sea lice. If she decides to check 40 fish next month instead of 30, how many do you predict will have sea lice that month?
- A. 8
 - B. 10
 - C. 15
 - D. 20

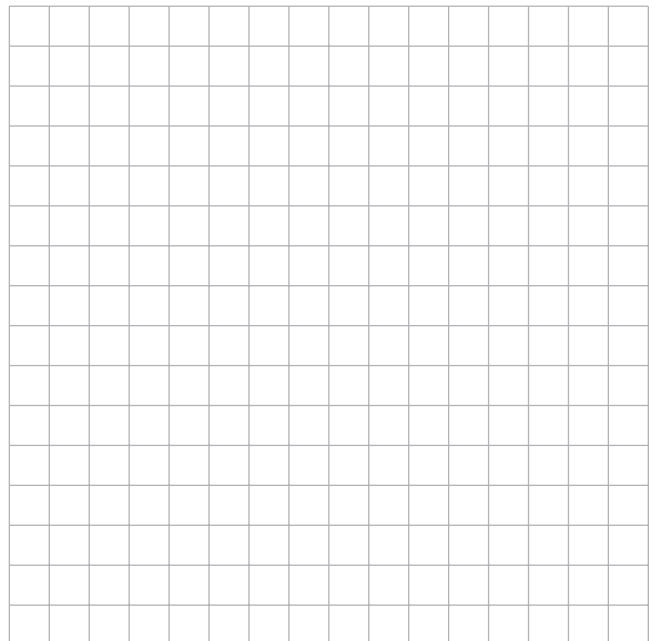
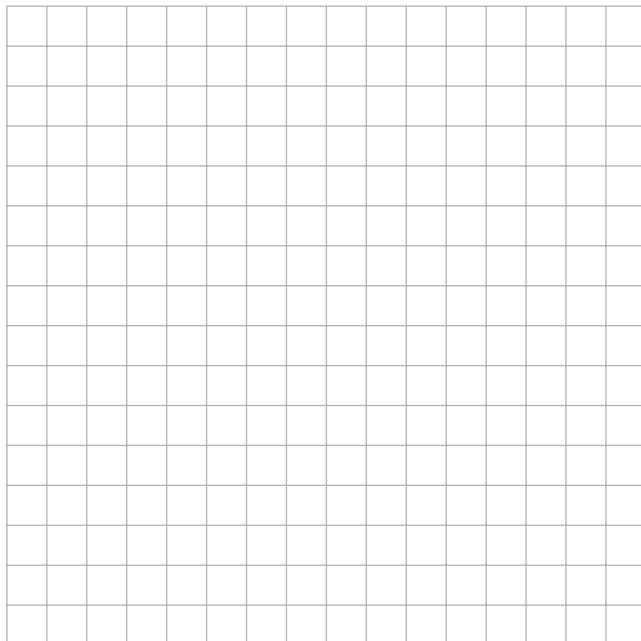
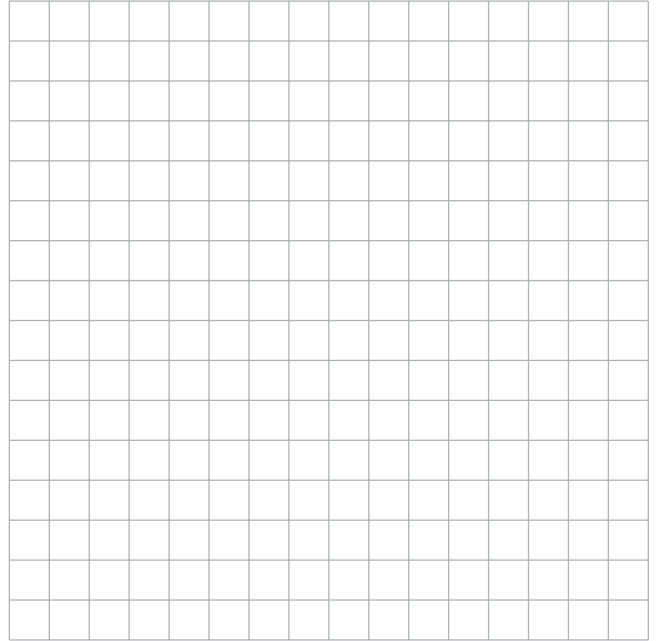
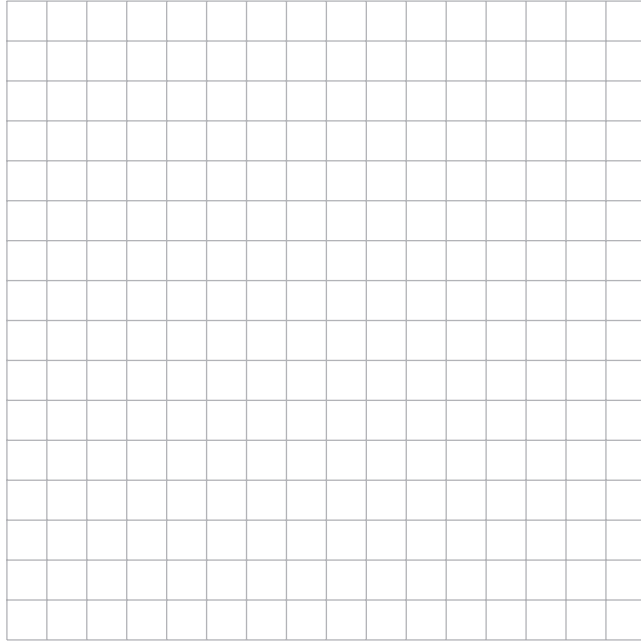
You have **Student Booklet Form A**. In the box below #60 on your **Response Form**, fill in the bubble as follows, if it is not already filled in.

Student Booklet/ Cahier d'examen	A	B	C	D
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

END OF EXAMINATION

ROUGH WORK FOR GRAPHING

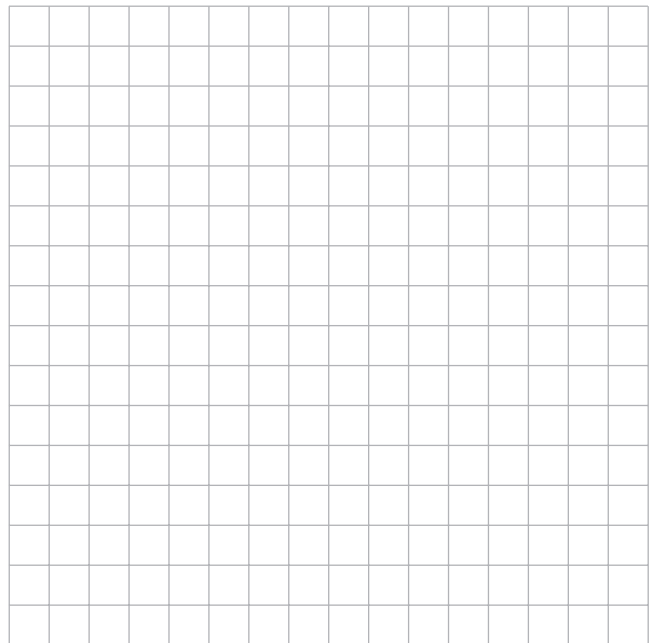
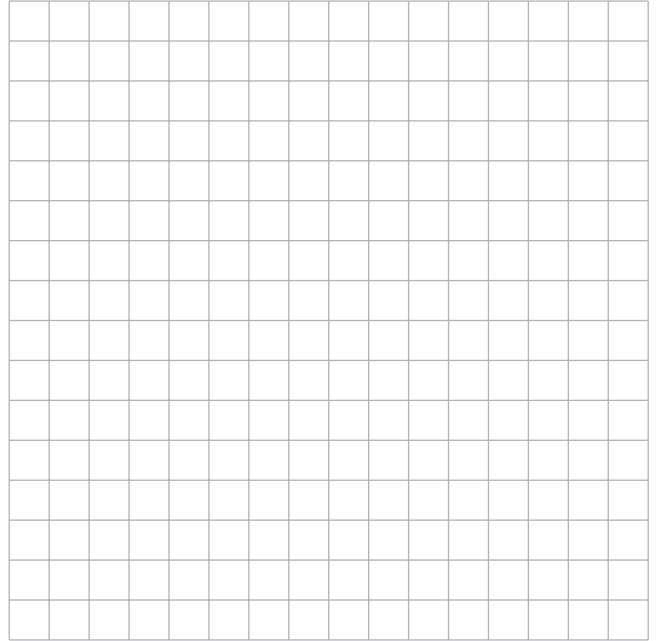
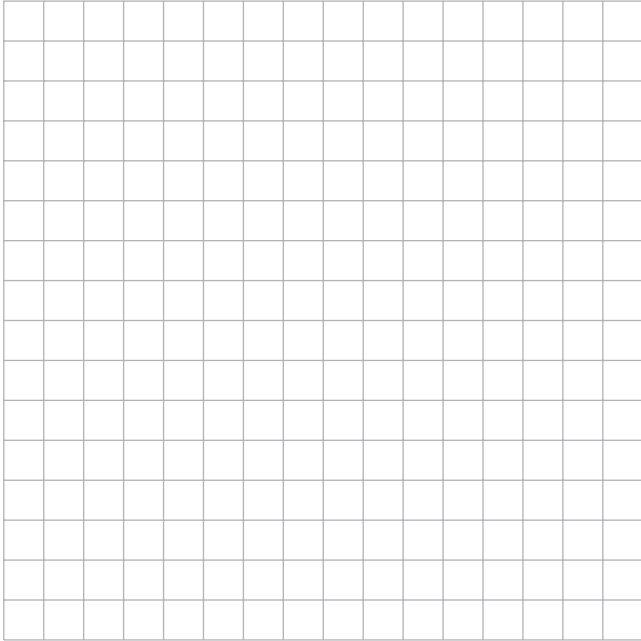
(No marks will be given for work done on this page.)



**You may detach this page for convenient reference.
Exercise care when tearing along perforations.**

ROUGH WORK FOR GRAPHING

(No marks will be given for work done on this page.)



ROUGH WORK SPACE

**You may detach this page for convenient reference.
Exercise care when tearing along perforations.**

ROUGH WORK SPACE