



# Essentials of Mathematics 10

## Examination Booklet

### Sample Exam A

(updated October 2006)

**DO NOT OPEN ANY EXAMINATION MATERIALS UNTIL INSTRUCTED TO DO SO.**

#### Examination Instructions

1. On your Answer Sheet, fill in the bubble (Form A, B, C, D, E, F, G or H) that corresponds to the letter on this Examination Booklet.
2. Use a pencil to fill in bubbles when answering questions on your Answer Sheet.
3. When answering **Numerical-Response** questions on your Answer Sheet:

- print digits as illustrated:



- shade the bubble with the negative symbol if the answer is negative; shade or leave blank the bubble with the positive symbol if the answer is positive.
- write your answer in the spaces provided using one digit per box, noting proper place value.
- leave unused boxes blank. For example, the answer  $-70.6$  will be written as shown:



4. When using your calculator:
  - use the programmed value of  $\pi$  rather than the approximation of 3.14.
  - rounding should occur only in the final step of the solution.
5. Diagrams are not necessarily drawn to scale.
6. When the examination begins, remove the data pages located in the centre of this booklet.
7. Read the Examination Rules on the back of this booklet.



You have **Examination Booklet Form A**. In the box above #1 on your **Answer Sheet**, fill in the bubble as follows.

Exam Booklet Form/ Cahier d'examen	A	B	C	D	E	F	G	H
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

1. When an account is said to be “overdrawn” which of the following may have happened?
  - A. A deposit was greater than the balance.
  - B. A withdrawal was larger than a deposit.
  - C. The interest was larger than the withdrawal.
  - D. A withdrawal was greater than the account balance.
  
2. Jack maintains a \$2000 balance in his value account each month. He uses 11 self-serve transactions and 4 full-serve transactions each month. What, if any, are his monthly charges?
  - A. \$0.00
  - B. \$0.50
  - C. \$3.95
  - D. \$4.45

Use the following transaction record to answer question 3.

Transaction Record						
Cheque #	Date	Description	Payment/Debit	✓	Deposit/Credit	Balance 300.27
205	17/06	<i>Mtn. Tires</i>	128.96			
<i>Deposit</i>	18/06	<i>Deposit</i>			206.46	
206	21/06	<i>Mtn. Bike Gear</i>	50.00			
207	22/06	<i>Overland Bikes</i>	286.23			
<i>Deposit</i>	24/06	<i>Deposit</i>			75.29	
<i>Deposit</i>	26/06	<i>Deposit</i>			196.96	
208	01/07	<i>Cross Country Fee</i>	75.00			

3. Cheque #209 was written on July 17 for \$42.63. A deposit was made on July 18, which included a cheque for \$123.32, two \$10 bills, and five \$5 bills. What is the final balance?
- A. \$106.84
  - B. \$241.06
  - C. \$364.48
  - D. \$532.80

4. Dennis deposited 6 toonies, 8 loonies, 131 dimes, 83 quarters, 78 pennies and a certain number of nickels into his savings account. His deposit was \$58.03. How many nickels did he deposit?

**Record your answer neatly on the Answer Sheet.**

Use the following transaction record to answer questions 5 and 6.

Transaction Record: Chequing Account 412-783-27				Jacob Yoblanski		
Cheque #	Date	Description	Payment /Debit	✓	Deposit /Credit	Balance
						254.00
WWW	13/06	Transfer from savings			50.00	304.00
WWW	13/06	Sound Electronics	44.11			259.89
DEP	15/06	ATM Deposit			120.00	379.89
TEL	17/06	Telus	34.99			344.90
DEP	21/06	ATM Deposit			100.00	444.90
TEL	23/06	Shaw Cable	56.54			388.36
WWW	24/06	Terasen	63.56			324.80
DEP	28/06	ATM Deposit			130.00	454.80

5. What is the total payment Jacob made over the Internet?

- A. \$199.20
- B. \$107.67
- C. \$91.53
- D. \$57.67

6. What is the total deposit into Jacob's chequing account?

- A. \$454.80
- B. \$400.00
- C. \$255.60
- D. \$199.20

7. Sarah makes 20 self-serve transactions per month. She receives a monthly statement and requests the return of two cheques per month. If her minimum monthly balance is \$1000.00, what is the difference in monthly charges between the Value and Self-Serve Accounts?
- A. \$1.95  
 B. \$5.00  
 C. \$6.95  
 D. \$14.95
8. If the final balances are the same on the statement of reconciliation below, which of the following statements is always true?

BANK OF EVERMORE Blue Harbour, B.C.		Statement of Reconciliation	
Bank Statement		Transaction Record	
FINAL BALANCE shown on this statement	\$576.38	FINAL BALANCE shown on transaction record	\$391.60
ADD DEPOSITS made after the statement date		SUBTRACT WITHDRAWALS which are not shown on transaction record	
SUBTOTAL \$			
SUBTRACT WITHDRAWALS made after the statement date			
FINAL BALANCE \$		FINAL BALANCE	\$385.60

- A. The bank made an error on its final balance.  
 B. Deposits were made after the statement date.  
 C. The transaction final balance wasn't accurate.  
 D. The final balance indicates the correct balance in an account.

9. Which of the following is **not** a compulsory payroll deduction in Canada?

- A. EI
- B. CPP
- C. Medical
- D. Income Tax

10. Herbie is paid \$11.50 an hour for a 35-hour week. He receives time-and-a-half for the hours he works over 35. If he worked 39 h this week, how much did he earn in overtime pay?

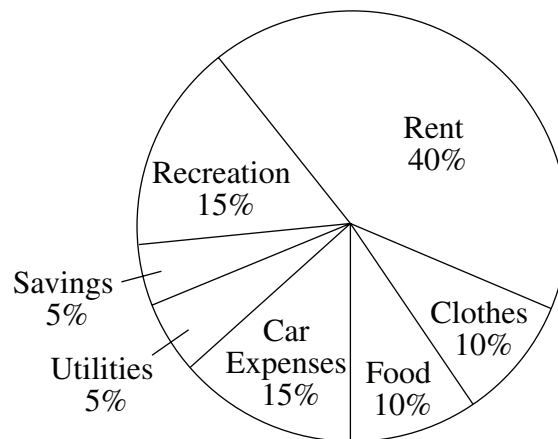
- A. \$23
- B. \$46
- C. \$69
- D. \$92

11. Max earns \$18 000 per year at a part-time job. What are his total weekly deductions if his claim code is 3? (CPP, EI, Federal and Provincial)

- A. \$55.85
- B. \$55.84
- C. \$48.39
- D. \$48.37

12. If Todd's monthly net income is \$2250, how much money does he hope to save in 6 months?  
(Answer in dollars.)

Todd's Yearly Budget



**Record your answer neatly on the Answer Sheet.**

13. Lou earns \$46 000 a year. He wants to save 8% of his income for a down payment on a house. What amount should he save per month?
- A. \$306.67
  - B. \$368.00
  - C. \$3066.67
  - D. \$3680.00
14. Luke currently works 30 h per week at \$8.00/h . He is going to receive a raise of \$0.80/h and he will work an additional 5 h during the week. What will be his pay increase?
- A. \$40.00
  - B. \$68.00
  - C. \$240.00
  - D. \$308.00







15. After four weeks, how much **more** has Job A paid than Job B?

Job A	Job B
35 h/week \$9.50/h plus 6 h overtime (time and a half) each week	40 h/week \$9.50/h 3% increase after 3 weeks

- A. \$0.23
- B. \$110.00
- C. \$140.60
- D. \$313.80

16. Which of the following icons would be used to centre text in a spreadsheet?

- A. 
- B. 
- C. 
- D. 

17. Jerry purchased the following items. What is the rate of PST?

	A	B	C	D	E
1	Items	Price (\$)	GST (\$)	PST (\$)	Total (\$)
2	Hockey Stick	24.99	1.75		28.99
3	Puck	8.99	0.63	0.81	
4	Shoulder Pads	15.99			18.55

- A. 7%
- B. 7.5%
- C. 9%
- D. 16%

18. Which of the following formulae could be used to calculate E3?

	A	B	C	D	E
1	Teams	Wins (2)	Losses (0)	Ties (1)	Points
2	W	12	3	4	28
3	X	10	5	4	

- A. = (B3\*2 - C3)
- B. = (B3 + C3 + D3)
- C. = (B3\*2 + D3)
- D. = SUM(B3: D3)

19. How much will it cost, including taxes, to purchase one bag and 2 pairs of sunglasses?  
(Answer in dollars and cents.)

	A	B
1	Essential Accessories Store of Quebec	
2	Items	Unit Price (\$)
3	Sunglasses	12.99
4	Bags	18.99

**Record your answer neatly on the Answer Sheet.**

20. Using the spreadsheet below, what would be the total cost of one belt if the PST rate was raised to 12%?

	A	B	C	D	E
1	Items	Unit Price (\$)	GST (%)	PST (%)	Total (\$)
2	Belt		7	7	28.49
3	Tie	8.99	7	7	
4					

- A. \$28.79
- B. \$29.74
- C. \$38.74
- D. \$40.44

21. Using the fill down function in C1, what formula will appear in C3?

	A	B	C
1	10	4	10A1*4B1
2	5	2	
3	6	1	?

- A. 5A2\*2B2
- B. 6A3\*1B3
- C. 10A1\*4B1
- D. 10A3\*4B3

22. What are the advantages of using computerized spreadsheets?

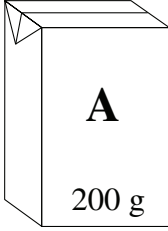
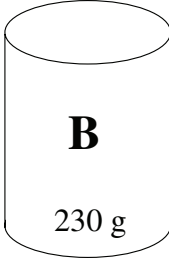
I.	Spreadsheets organize data efficiently.
II.	Spreadsheets are less likely to make arithmetic errors.
III.	Spreadsheets automatically recalculate if the numbers in the cells are changed.
IV.	Spreadsheets perform multiple calculations.

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

23. What is the value of  $x$  in the proportion  $\frac{2}{7} = \frac{6}{x}$  ?

- A.  $\frac{12}{7}$
- B.  $\frac{7}{3}$
- C. 11
- D. 21

Use the following diagram to answer questions 24 and 25.

Product		
Unit Price	?	\$0.07/g
Total Cost	\$24.55	?

24. What is the unit price for Product A in dollars per gram?

- A. \$0.07/g
- B. \$0.11/g
- C. \$0.12/g
- D. \$0.19/g

25. What is the cost of Product B in dollars?

- A. \$9.20
- B. \$16.10
- C. \$27.60
- D. \$43.70

26. Chris purchased a cell phone for \$50.00 and a USB cable for \$30.00. If the items are purchased in BC, what is the total cost including PST and GST?
- A. \$80.00
  - B. \$84.80
  - C. \$85.60
  - D. \$90.40

27. The scale on a map is 1 cm : 15 km. If the distance between Town A and Town B on the map is 6 cm, then what is the actual distance between the towns? (Answer in kilometres to 1 decimal place.)

**Record your answer neatly on the Answer Sheet.**

28. Jamie, who lives in Quebec (QC), wants to buy a new video game console. Which store has the better buy and by how much?

<p>Store A</p> <p>\$199.99 each</p> 	<p>Store B</p> <p>\$199.99 each</p> 
<p>Special Sales Promotion: <b>\$30 mail-in rebate!</b></p>	<p>Special Sales Promotion: <b>Pay no PST or GST!</b></p>

- A. Store A by \$3.00
- B. Store A by \$30.00
- C. Store B by \$3.00
- D. Store B by \$27.00

29. Rank the cereals below from least to greatest with respect to calories per gram.

Cereal I  
\$4.95

<b>Nutrition Facts</b>	
per 30 g Serving	
<hr/>	
<b>Calories</b>	112

Cereal II  
\$6.95

<b>Nutrition Facts</b>	
per 50 g Serving	
<hr/>	
<b>Calories</b>	122

Cereal III  
\$3.98

<b>Nutrition Facts</b>	
per 60 g Serving	
<hr/>	
<b>Calories</b>	132

Cereal IV  
\$5.67

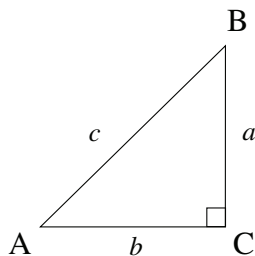
<b>Nutrition Facts</b>	
per 80 g Serving	
<hr/>	
<b>Calories</b>	192

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

30. The ratio of speed between Cyclist A and Cyclist B in a race is 12 : 7. If the speed of Cyclist A is 13 km/h, what is the speed of Cyclist B?

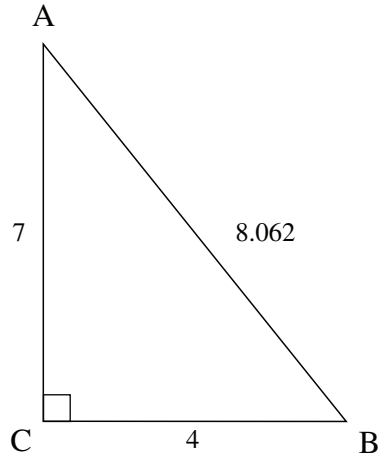
- A. 6.46
- B. 7.58
- C. 8.00
- D. 22.28

31. What is  $\sin A$ ?



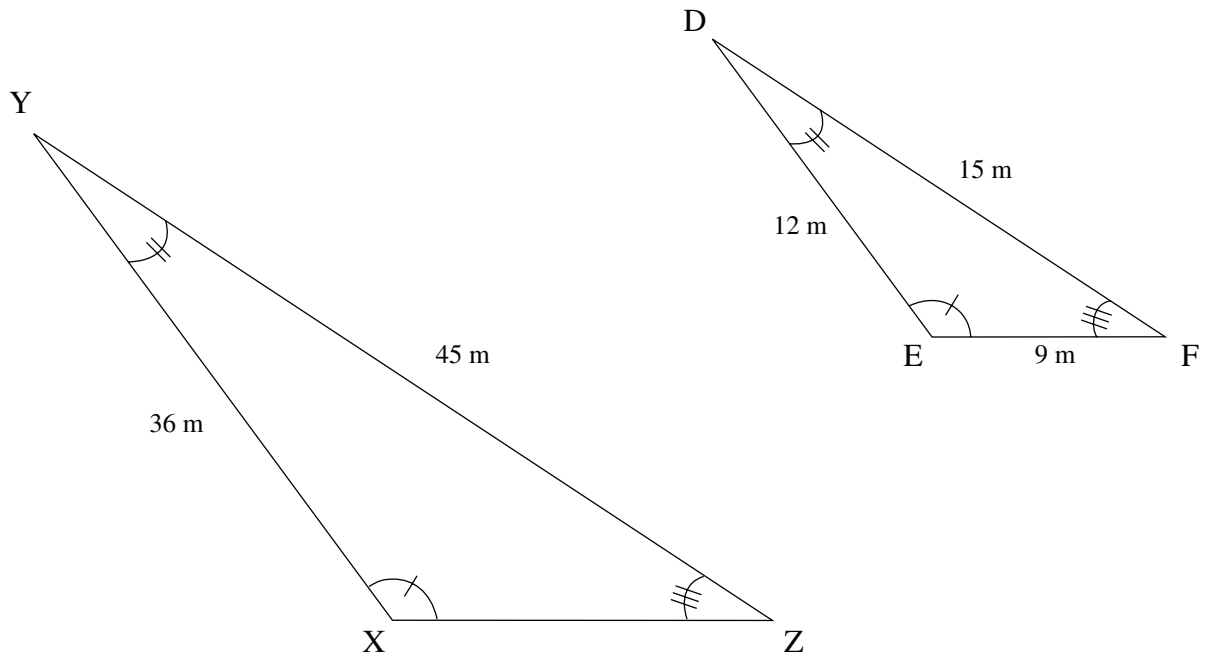
- A.  $\frac{b}{c}$
- B.  $\frac{a}{b}$
- C.  $\frac{a}{c}$
- D.  $\frac{b}{a}$

32. Given right triangle ABC with  $a = 4$ ,  $b = 7$ ,  $c = 8.062$ , calculate  $\cos B$ .



- A. 0.496
- B. 0.868
- C. 1.152
- D. 60.3

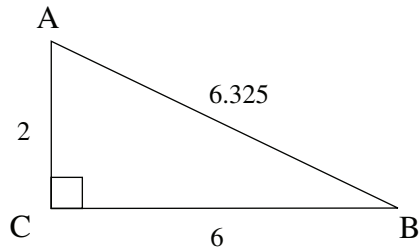
33. What is the length of XZ?



- A. 3 m
- B. 27 m
- C. 22 m
- D. 75 m

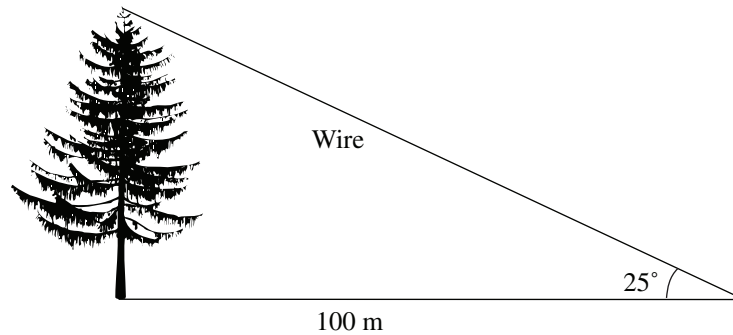


34. Given right triangle ABC with  $a=6$ ,  $b=2$ ,  $c = 6.325$ . Calculate  $\angle A$ .  
(Answer to the nearest degree.)



**Record your answer neatly on the Answer Sheet.**

35. What is the length of the wire to the nearest tenth of a metre?

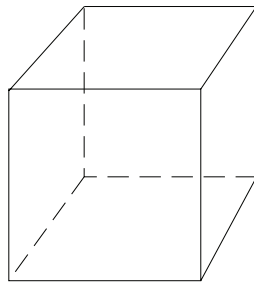


- A. 46.6 m  
B. 90.6 m  
C. 110.3 m  
D. 236.6 m
36. The length of a shadow cast by a maple tree is 22 feet. At the same time, the length of a shadow cast by a 4-foot sunflower plant is 1.5 feet. What is the height of the maple tree?
- A. 8.3 feet  
B. 27.5 feet  
C. 58.7 feet  
D. 132.0 feet

37. Which units of measurement would be best to measure your height?

- A. feet and yards
- B. feet and inches
- C. inches and yards
- D. inches and feet and yards

38. If the total surface area of a cube is  $150 \text{ cm}^2$ , what is the length of one side of the cube?

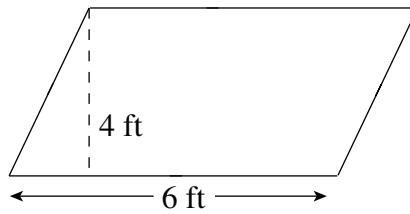


- A. 5 cm
- B. 6 cm
- C. 12 cm
- D. 25 cm

39. If the length of a pencil is 15 cm, what is the length of the pencil in inches?

- A. 38.10 in
- B. 13.46 in
- C. 5.91 in
- D. 1.69 in

40. What is the area of the parallelogram in square metres?

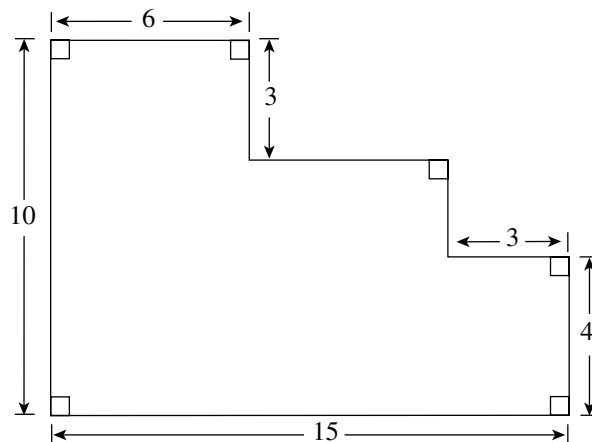


- A. 24.0 m<sup>2</sup>
- B. 12.0 m<sup>2</sup>
- C. 7.3 m<sup>2</sup>
- D. 2.2 m<sup>2</sup>

41. Which of the following will be an appropriate unit to measure the amount of chain link needed to fence a soccer field?

- A. cm
- B. m
- C. m<sup>2</sup>
- D. m<sup>3</sup>

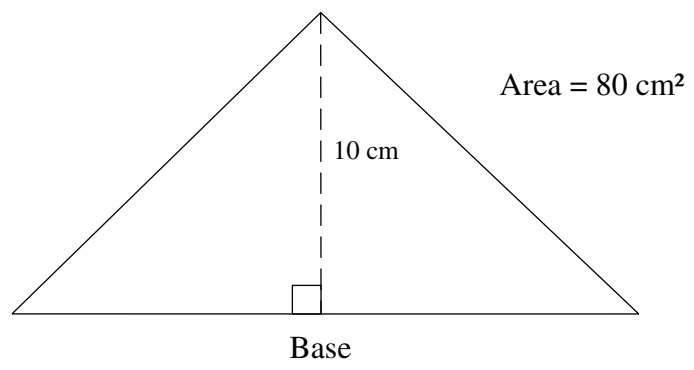
42. What is the perimeter of the shape below? (Answer to the nearest whole number.)



**Record your answer neatly on the Answer Sheet.**

43. A rectangular field measures 60 feet by 200 feet. If the length and width are each reduced by 20%, then by what percent is the total perimeter reduced?
- A. 20%
  - B. 24%
  - C. 40%
  - D. 80%

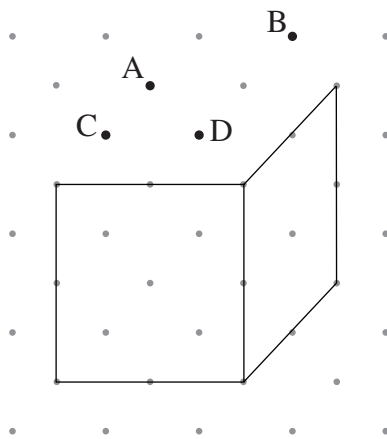
44. In the triangle below, what is the length in centimetres of the base?



- A. 4
- B. 8
- C. 16
- D. 32

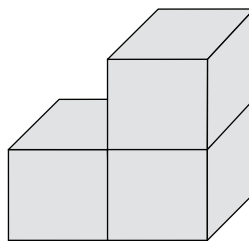
45. The scale of a map is 1 cm : 100 km. If the distance from Vancouver to Winnipeg is 1000 miles, what is the distance between these two cities on the map?
- A. 1.0 cm
  - B. 1.6 cm
  - C. 10.0 cm
  - D. 16.0 cm

46. Which letter will complete the isometric diagram of the cube below?



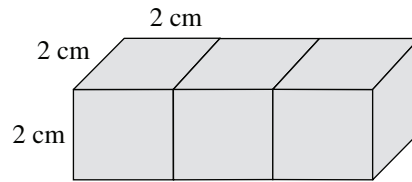
- A. Letter A
- B. Letter B
- C. Letter C
- D. Letter D

47. How many faces should be included in the calculation of the **total** surface area of this 3-D object?



- A. 7
- B. 12
- C. 13
- D. 14

48. Three blocks are joined together. Paint costs  $\$0.20/\text{cm}^2$ . How much would it cost to paint this 3-D object? (Include the bottom.)



- A. \$1.60
- B. \$2.80
- C. \$11.20
- D. \$22.40

49. The results of a student council survey are shown below. What is the sample size?

Rock	Heavy Metal	Hip Hop	Jazz
21	7	10	12

**Record your answer neatly on the Answer Sheet.**

50. A regular die is tossed. What is the probability that the die will show a number less than 3?

- A.  $\frac{1}{6}$
- B.  $\frac{1}{2}$
- C.  $\frac{1}{4}$
- D.  $\frac{1}{3}$

51. Find the mean of 2, 3, 3, 4, 5, 6, 7, 8, 9

- A. 3.0
- B. 5.0
- C. 5.2
- D. 5.4

52. John's quiz marks are listed below.

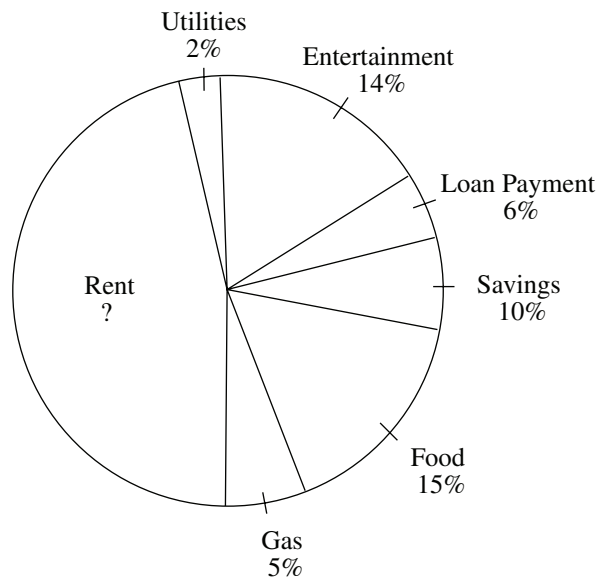
5, 9, 4, 6, 5, 2, 8, 5, 7, 6, 3, 5

What is the median of the data?

- A. 5.0
- B. 5.2
- C. 5.4
- D. 5.5

53. What percent of the budget is set aside for rent?

Monthly Budget

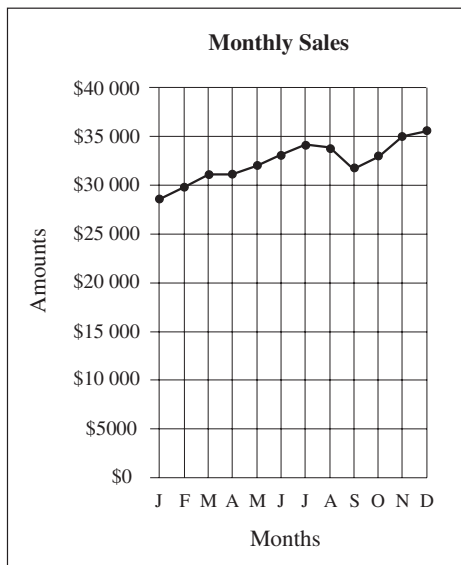


- A. 48%
- B. 52%
- C. 173%
- D. 187%

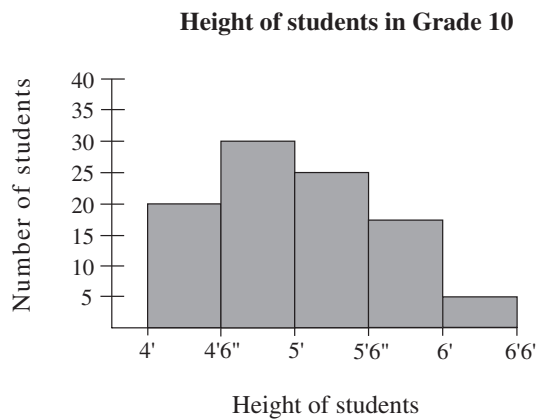


54. Which of the following graphs is a histogram?

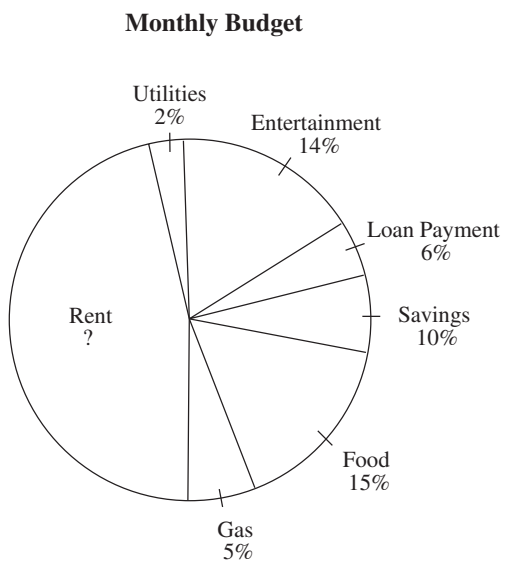
A.



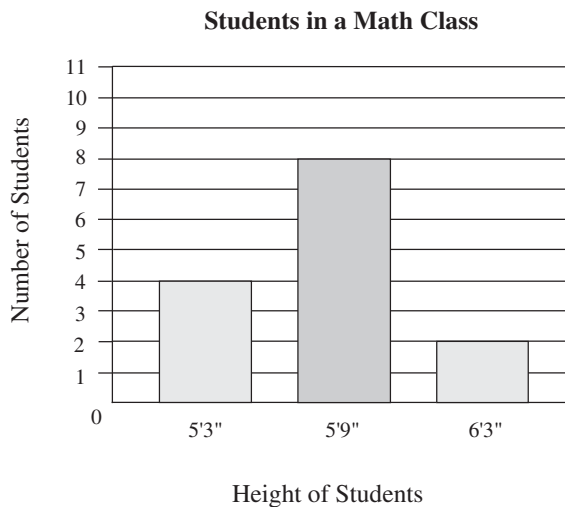
B.



C.



D.



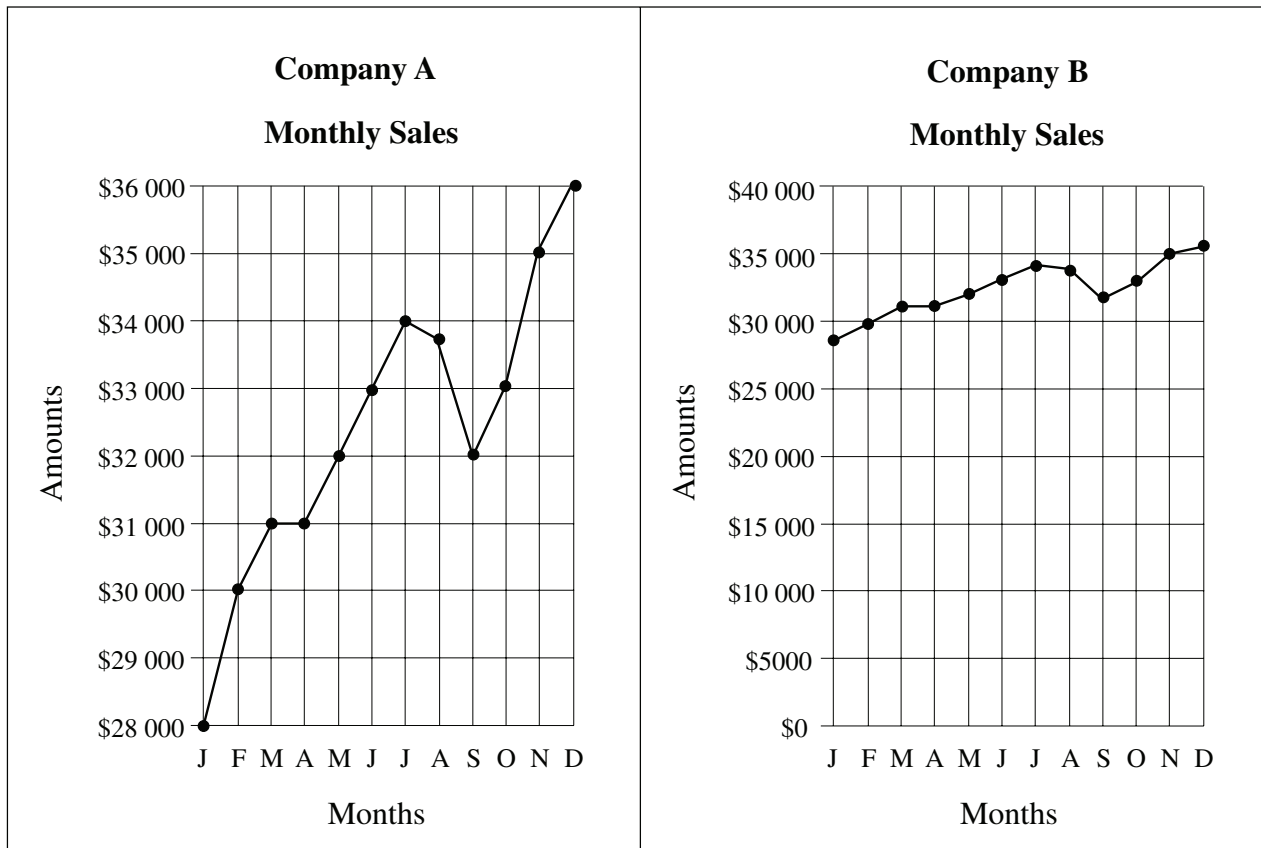
- A. Graph A
- B. Graph B
- C. Graph C
- D. Graph D

55. Predict how many Canadians have blood type AB in a population of 100 000.

Blood Type Per 200 Canadians				
Blood Type	O	A	B	AB
Number of Canadians	94	76	24	6

- A. 30 000
- B. 15 000
- C. 3 000
- D. 1 500

Use the following graphs to answer question 56.



56. Which one of the following statements is true?

- A. The monthly sales for both companies were the same.
- B. Company A sales varied more than Company B sales.
- C. Company B had greater sales for February.
- D. Company A had greater monthly sales.

57. All 26 letters of the alphabet from A to Z are printed on a different piece of paper. What is the probability of randomly choosing a piece of paper with the letter E on it? (Answer in decimal form to two decimal places.)

**Record your answer neatly on the Answer Sheet.**

58. A tour company wishes to estimate the percent of Canadians who plan on taking a trip in the next 12 months. Which method should give a representative sample?
- A. Choose people in airport waiting rooms.
  - B. Have hotel guests complete a questionnaire.
  - C. Select people at random from the phone book.
  - D. Have travel agency clients complete questionnaires.
59. Rachel needed to determine the type of music to be played at the Grade 12 dance. She randomly asked 70% of the Grade 10 students their favorite type of music. What is the bias of the method above?
- A. cultural
  - B. age group
  - C. sample size
  - D. socio-economic
60. A ranger captures and marks 18 beavers in a lake. One month later she captures 91 beavers. If 7 of the 91 beavers are marked, then how many beavers are in the lake?
- A. 35
  - B. 108
  - C. 138
  - D. 234

You have **Examination Booklet Form A**. In the box above #1 on your **Answer Sheet**, ensure you filled in the bubble as follows.

Exam Booklet Form/ Cahier d'examen	A	B	C	D	E	F	G	H
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**END OF EXAMINATION**





## Examination Rules

1. The time allotted for this examination is two hours.  
You may, however, take up to 60 minutes of additional time to finish.
2. Answers entered in this Booklet will not be marked.
3. Cheating on an examination will result in a mark of zero. The Ministry of Education considers cheating to have occurred if a student breaks any of the following rules:
  - Candidates must not give or receive assistance of any kind in answering an examination question during an examination, including allowing one's paper to be viewed by others or copying answers from another student's paper.
  - Candidates must not possess any book, paper or item that might assist in writing an examination, including a dictionary or piece of electronic equipment, that is not specifically authorized for the examination by ministry policy.
  - Candidates must immediately follow the invigilator's order to stop writing at the end of the examination time and must not alter an Examination Booklet, Response Booklet or Answer Sheet after the invigilator has asked students to hand in examination papers.
  - Candidates must not communicate with another student during the examination.
  - Candidates must not remove any piece of the examination materials from the examination room, including work pages.
  - Candidates must not take or knowingly use any secure examination materials prior to the examination session.
4. The use of inappropriate language or content may result in a mark of zero being awarded.
5. Upon completion of the examination, return all examination materials to the supervising invigilator.