GRADE 11 CST MATH

MIDYEAR EXAM REVIEW

SECTION 1: MULTIPLE CHOICE

Note:

- You have seen all of these questions before. Your midyear exam will contain 5 multiple choice questions based on the same types of questions as in this package.
- Answer key posted on website (thomsonmachigh.weebly.com)
- Please come see me ASAP if you do not understand any of these

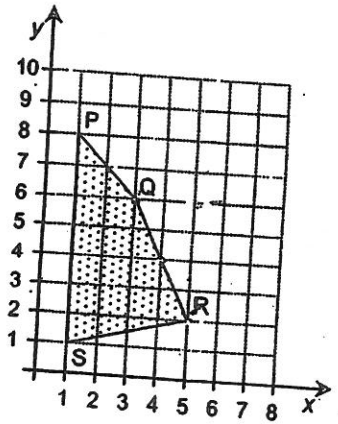
Test #2 CST Sec 5

optimize, Solutions f(x) maximum

2014-15

1) As part of an air show, a woman offers to take visitors for a ride in her hot-air balloon. The revenue from each ride depends on the number of adults and the number of children on board.

Taking into account the constraints she faces, she drew the polygon of constraints PQRS shown below.



Solution

x : number of adults
y : number of children

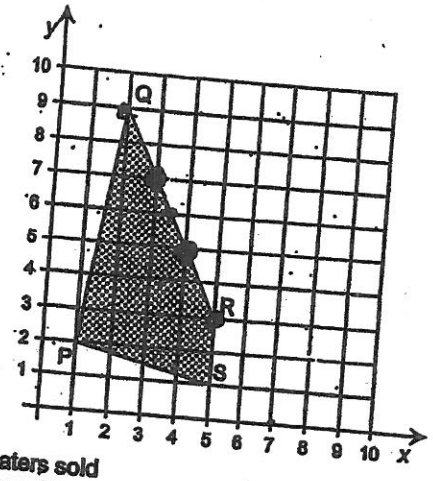
In order to determine the maximum revenue she can earn from each ride, the woman calculated the values shown in the table below.

COORDINATES OF THE VERTICES OF THE POLYGON OF CONSTRAINTS	REVENUE
P(1, 8)	$100
Q(3, 6)	$120
R(5, 2)	$120
S(1, 1)	$30

In this situation, how many solutions maximize her revenue?

A) 1 solution
B) 2 solutions
~~B) 2 solutions~~
~~C) 3 solutions~~
D) More than 3 sol.
~~D) More than 3 solutions~~

2) The owner of a clothing store wants to maximize his revenue over the next ho Polygon of constraints PQRS below represents the different possible combina of sweaters and shirts he can sell.



x : number of sweaters sold
y : number of shirts sold

The owner uses the values in the following table to determine the maximum revenue of his store.

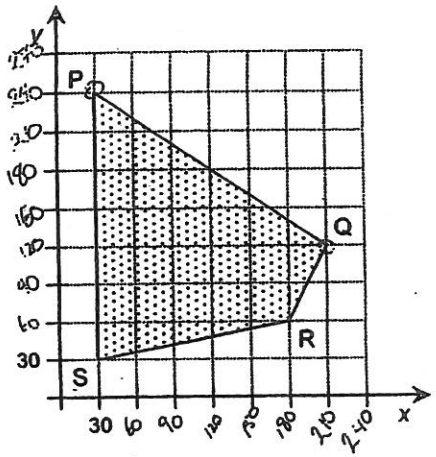
COORDINATES OF THE VERTICES OF THE POLYGON OF CONTRAINTS	STORE'S REVENUE
P(1, 2)	$60
Q(2, 9)	$195
R(5, 3)	$195
S(5, 1)	$165

In this situation, how many solutions maximize the store's revenue?

A) 1 solution
B) 2 solutions
C) 3 solutions
D) 4 solutions

(3)

There are certain constraints on the number of cassettes and the number of a music store can sell. These are represented by the following polygon of constraints.



Solution

x : number of cassettes sold
y : number of disks sold

The music store wants to maximize its revenue. The table below shows the revenue corresponding to each vertex of the polygon.

Vertex of the polygon of constraints	Revenue
P(30, 240)	$4 680
Q(210, 120)	$4 680
R(180, 60)	$3 240
S(30, 30)	$900

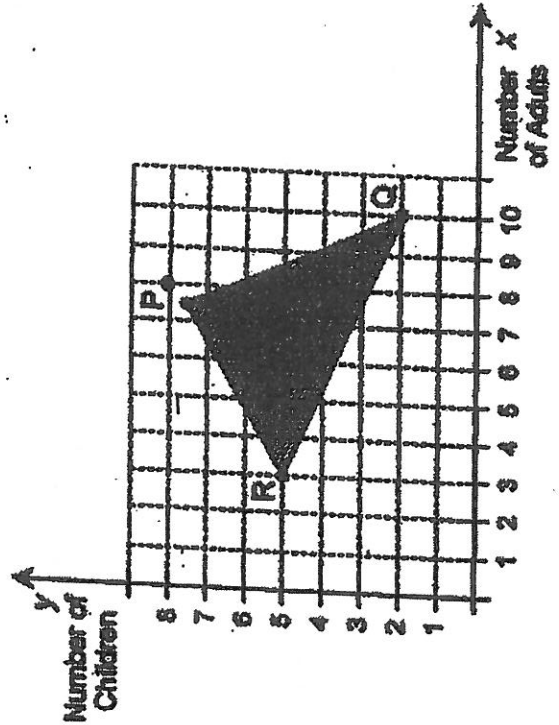
In this situation, how many solutions maximize the store's revenue?

A) No solution
B) 1 solution
C) 2 solutions
D) More than 2 solutions

(4)

Different constraints limit the number of children and the number of adults that can enroll in a painting class at the same time. The following polygon of constraints represents the possible combinations of adults and children.

Coordinates of the Vertices of the Polygon of Constraints
P(7.5, 7.5)
Q(10, 2)
R(3, 5)

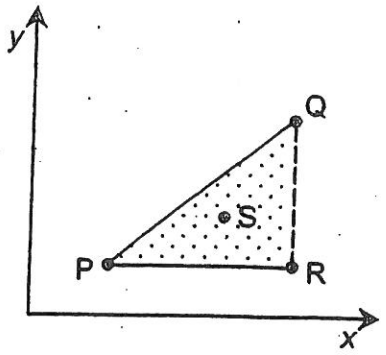


The teacher is paid $40 per adult and $30 per child enrolled.

How many adults and how many children must enroll in this class in order to maximize the teacher's income?

A) 7 adults and 7 children 490
B) 8 adults and 6 children 500
C) 8 adults and 8 children 560
D) 9 adults and 3 children 450

5. The solutions for a system of inequalities are represented in the Cartesian plane below. Points P, Q, R and S are shown on the graph.



Solution set

How many of these four points represent solutions for this system of inequalities?

A) 1

B) 2

C) 3

D) 4

6. **The three statements below concern optimization problems represented by polygons of constraints drawn in the Cartesian plane.**

- **Any optimization problem has at least one optimal solution.**
- **The point (0.0) always represents a solution to the system of inequalities associated with the constrains in a problem.**
- **The coordinates of the highest point of the plygon of constraints does not always maximize the value of the function to be optimized.**

How many of the above statements are true?

OPTIMIZE

A) All 3 statements

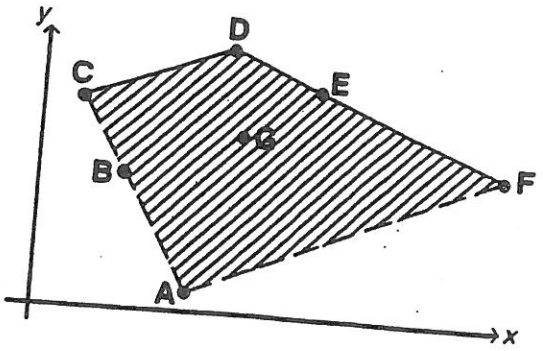
B) 2 statements

C) 1 statement

D) None of these statements

7. The solutions for a system of inequalities are represented on the right. Points A, B, C, D, E, F and G are shown on the graph.

Solutions



How many of these points represent a solution for this system of inequalities?

A) 1

B) 3

C) 6

D) 7

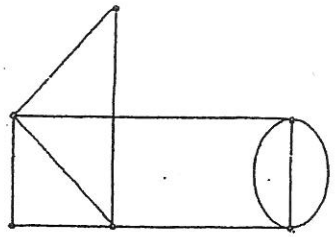
Multiple choice
1 to 12

ch. 2 – Hamiltonian Simple Euler path cycle 2014-15

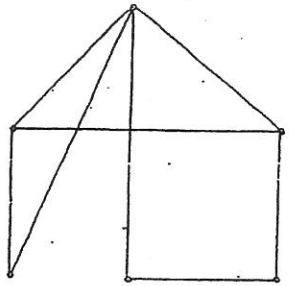
TEST 1

1 Which of the following contains an Euler circuit?

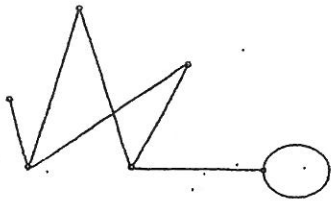
A)



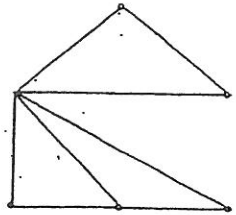
C)



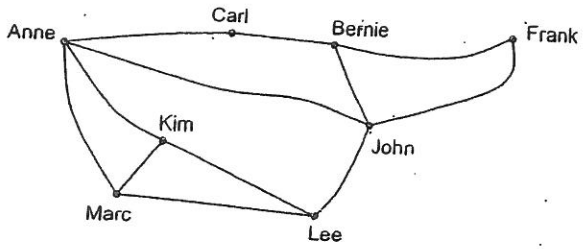
B)



D)



#3 issued by telephone. Each vertex in the graph below represents a club member. An edge connecting two vertices indicates that the two people in question know each other's telephone number.



Anne wants to make as few calls as possible so that she will have more time to organize the party. John cannot make any calls.

What is the minimum number of calls that Anne must make?

A) 1 call

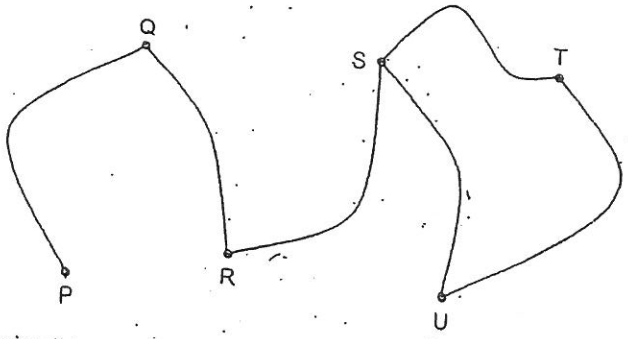
B) 2 calls

C) 3 calls

D) 4 calls

#4 In an outdoor centre, a network of 6 bicycle paths connects rest areas P, Q, R, S, T and U.

The vertices of the following graph represent the rest areas. The edges represent the bicycle paths.



Cyclists using this centre wish to start and end their bike ride at the same rest area, while riding along each bicycle path only once.

A new bicycle path must be built to meet this request.

Which rest areas must the new bicycle path connect?

A) P and R

B) P and S

C) P and U

D) R and U

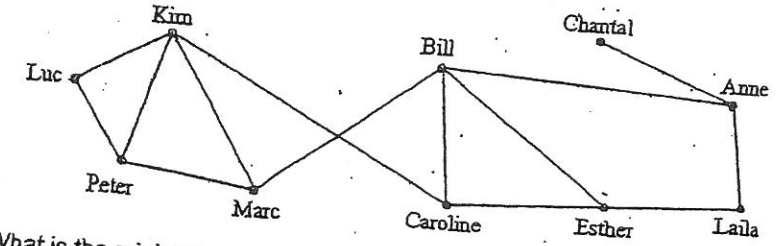
NOT as easy as it looks

TEST 2 MATH SEC 5

#2 ...ni is organizing a get-together.

The vertices of the graph represent the people who are expected to attend.

An edge connecting two vertices indicates that the two people in question know each other's telephone numbers.



What is the minimum number of phone calls required to contact everyone who is supposed to attend?

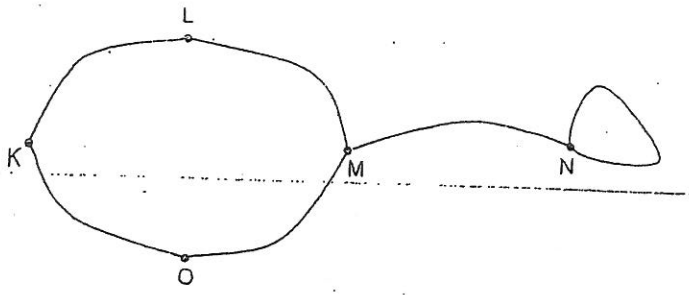
A) 9

B) 10

C) 15

D) 16

#5)



Which of the following statements is true?

A) The sequence L, M, N, N, M, O, K represents a path that passes over all the edges of the graph.

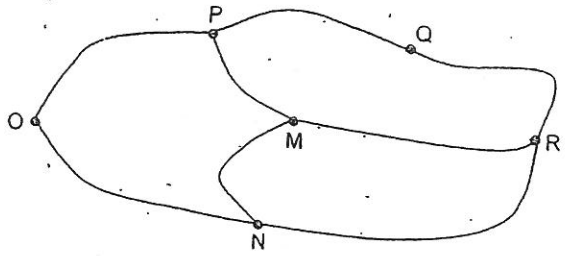
B) The sequence L, K, O, M, N represents a path that passes through all the vertices of the graph.

C) The sequence N, M, L, K, O, M, N represents a circuit that passes over all the edges of the graph.

D) The sequence N, M, O, K, L, M represents a circuit that passes through all the vertices of the graph.

#6.

Consider the graph below.



Which of the following paths is a circuit that passes through all the vertices of the graph?

A) M, P, Q, R, N, O

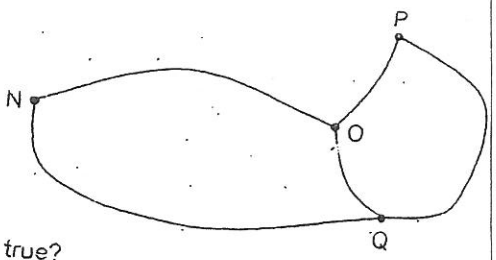
B) O, P, Q, R, M, N, R

C) P, Q, R, N, O, P

D) Q, R, M, N, O, P, Q

#7

Consider the graph on the right.



Which of the following statements is true?

A) The sequence N, O, P, Q, N represents a path that passes over all the edges of this graph.

B) The sequence N, P, Q, O represents a path that passes through all the vertices of this graph.

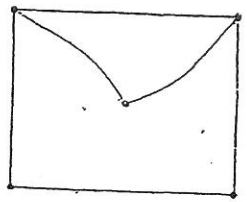
C) The sequence Q, P, O, N, Q, O represents a circuit that passes over all the edges of this graph.

D) The sequence Q, N, O, P, Q represents a circuit that passes through all the vertices of this graph.

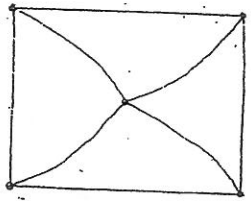
#8

Which of the following has a circuit that travels over each edge of the graph or and only once?

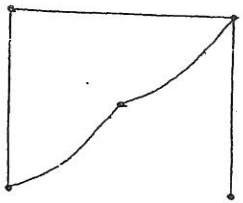
A)



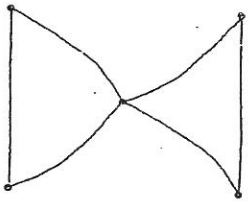
C)



B)



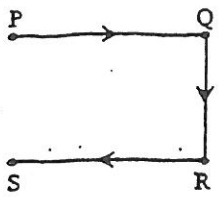
D)

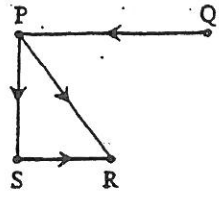


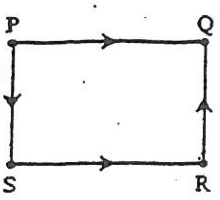
TEST #1 WEIGHTED, DIRECTED,

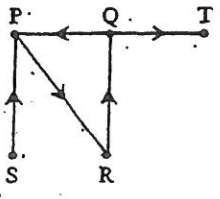
#1

Which one of the following graphs contains a circuit?

A) 

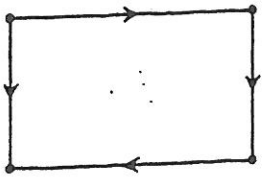
C) 

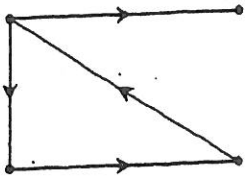
B) 

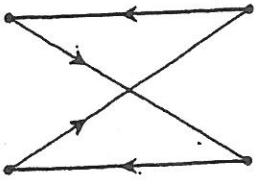
D) 

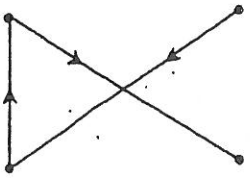
#4)

Which of the following has a circuit that passes through all the vertices of t graph?

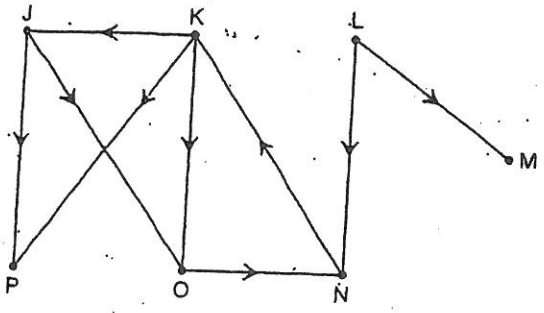
A) 

C) 

B) 

D) 

Consider the graph below.

#2) 

Which statement below is true?

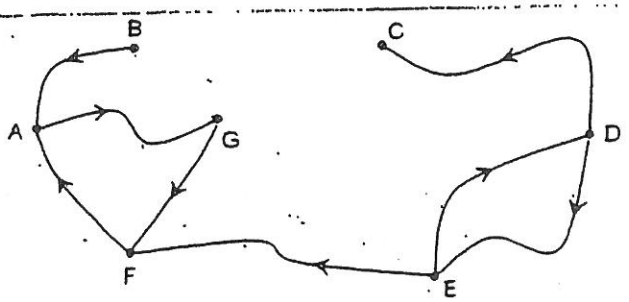
A) There is a circuit that begins at L.

B) There is a circuit that begins at P.

C) There is a path that begins at J and ends at N.

D) There is a path that begins at O and ends at M.

Consider the graph below.

#5 

Which of the following statements is true?

A) There is a path that begins at vertex A and ends at vertex D.

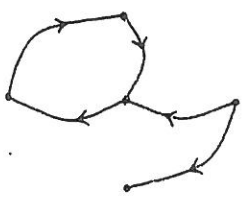
B) There is a path that begins at vertex B and ends at vertex F.

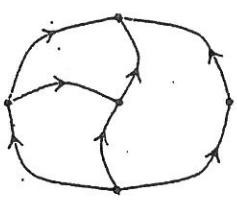
C) There is a path that begins at vertex E and ends at vertex B.

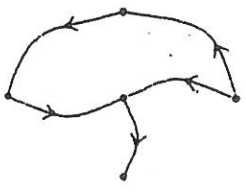
D) There is a path that begins at vertex G and ends at vertex C.

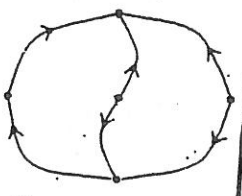
#3)

Which of the following graphs has a circuit?

A) 

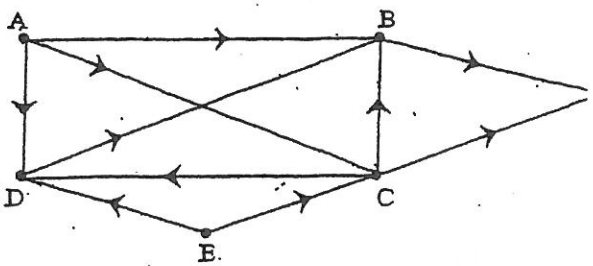
C) 

B) 

D) 

#6

Given the following graph.



Which of the following statements is true?

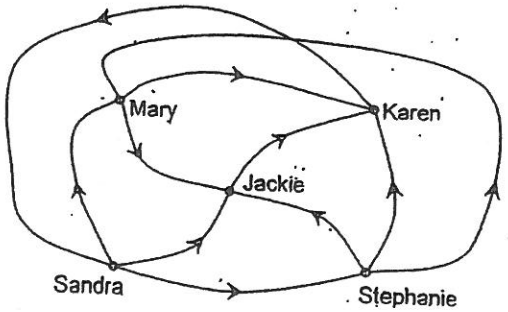
A) There is a path that begins at vertex B and ends at vertex D.

B) There is a path that begins at vertex C and ends at vertex A.

C) There is a path that begins at vertex D and ends at vertex C.

D) There is a path that begins at vertex E and ends at vertex B.

Five girls take part in a table tennis tournament. Each girl plays one game against each of the other girls. The following graph shows the outcomes of these games. For example, the directed edge from Mary to Karen indicates that Mary defeated Karen.



The two girls with the most victories will meet in the final.

Which girls will meet in the final?

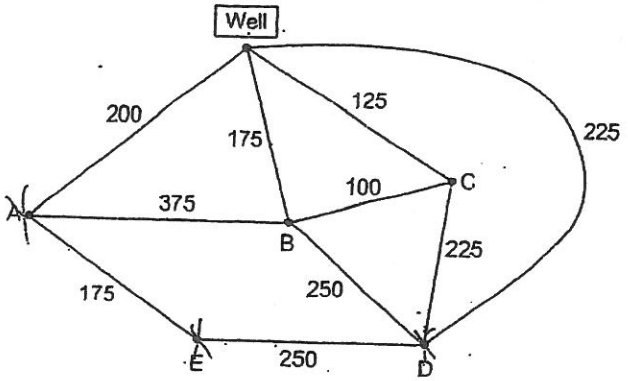
A) Jackie and Karen

B) Karen and Stephanie

C) Mary and Sandra

D) Sandra and Stephanie

A piping system needs to be installed so that a well can provide 5 cabins with water. Vertices A, B, C, D and E of the following graph represent the cabins. The other vertex represents the well. The edges represent every possible pipe that could be installed. The number on each edge indicates the cost in dollars of installing the corresponding pipe.



What is the minimum cost of installing this piping system?

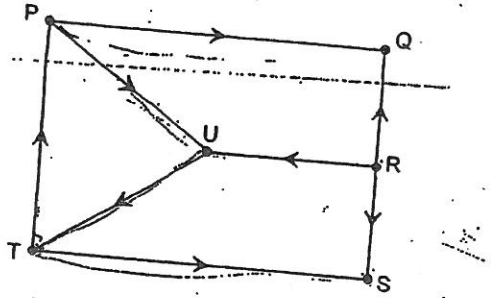
A) $775

B) $825

C) $900

D) $2100

Consider the graph below.



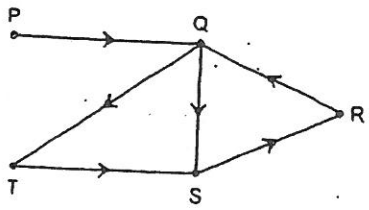
Which of the statements below is true?

A) There is a path that begins at P and ends at S.

B) There is a path that begins at Q and ends at U.

C) There is a path that begins at T and ends at R.

D) There is a path that begins at S and ends at Q.



Which of the following statements is true?

A) The sequence P, Q, T, S, R, Q represents a path that passes over all the edges of the graph.

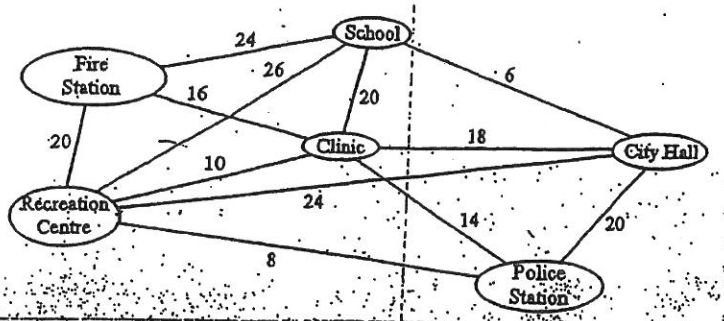
B) The sequence P, Q, T, S, R represents a path that passes through all the vertices of the graph.

C) The sequence P, Q, T, S, R, Q, S represents a circuit that passes over all the edges of the graph.

D) The sequence P, Q, T, S, R, Q, P represents a circuit that passes through all the vertices of the graph.

A)

A piping system must be installed to supply water to public buildings in a city. Each edge in the following graph represents a possible section of this piping system. The number of each edge indicates the installation cost in thousands of dollars for that section of the system.



What is the minimum cost of installing this system?

A) $54 000

B) $58 000

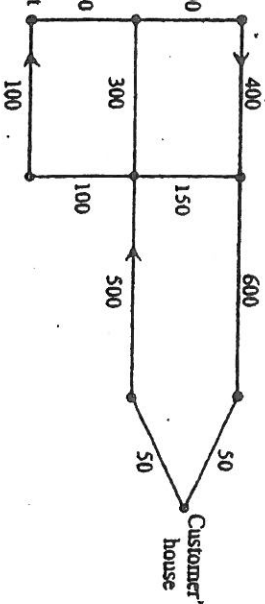
C) $72 000

D) $88 000

12)

Ken works as a deliveryman for a restaurant. He must leave the restaurant, deliver a meal to a customer's house and return to the restaurant.

In the following graph, the edges represent the different streets that Ken can take. Some are one-way streets. The vertices of the graph represent the various intersections. The number on each edge represents the distance, in metres, between two intersections.



What is the shortest distance that Ken can travel to make this delivery and return to the restaurant?

A) 1 500 metres

B) 1 750 metres

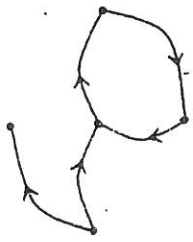
C) 2 050 metres

D) 2 200 metres

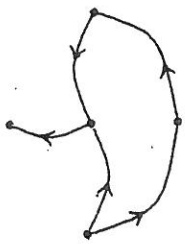
13)

Which of the following graphs has a circuit?

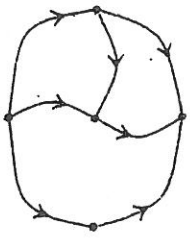
A)



B)



C)



D)