

## KEY

### walking

A. 1. a) DBCEFGAD  
BGFECDAB  
CEBGFADC

} other answers  
may vary

b) AGFECDAB  
c) DCEBGAF

2. a) IJGHDCBAFEI  
DCBAFEIJGHD  
BGJIHCDEFAB

} other  
answers may  
vary

b) AFEDCHIJGB  
c) FEDCBAJGHI

### Hamilton Circuits

- 1) Not possible
- 2) AFEDGHCBA (other answers may vary)
- 3) Not possible (path is)
- 4) Not possible (path is)

### Traveling Salesman Problem

1)  $5-7-9-12=31$

(the other two  
possible lengths  
are 33 & 36)

2)  $30-40-55-65=190$

(the other  
possible is 215)

leg lengths:

5, 6, 7, 9, 11, 12

Need 4 for a circuit.

$$6C4 = 15.$$

But: Some circuits are not possible-

5-6-7 cannot be (x3)

5-11-12 cannot be (x3)

7-9-11 cannot be (x3)

6-9-12 cannot be (x3)

$$4(3) = 12$$

$$15 - 12 = 3.$$

There are only 3 distinct circuits.

using edges 5-6-9-11 = 31

5-7-9-12 = 33

6-7-11-12 = 36

30, 40, 50, 55, 65, 70

the 3 distinct circuits use edges

40-50-55-70 = 215

30-50-65-70 = 215

30-40-55-65 = 190