

Review Worksheet (1.1 – 1.3)

1. Consider the following preference schedules for an election represented by the table below

First choice	C	<del>B</del>	A	<del>D</del>
Second choice	<del>E</del>	C	<del>E</del>	A
Third choice	<del>B</del>	<del>E</del>	C	<del>B</del>
Fourth choice	<del>D</del>	<del>D</del>	<del>B</del>	<del>E</del>
Fifth choice	A	A	<del>D</del>	C
<b>Number of Voters</b>	<b>5</b>	<b>4</b>	<b>7</b>	<b>6</b>

a) Who is the plurality winner? a) A

b) Who is the winner by the runoff method? b) D

$\begin{matrix} D & A \\ A & D \\ 15 & 7 \end{matrix}$       Eliminate E, B, and C

c) Who is the winner by the sequential runoff method? c) ~~A~~ A

Eliminate E  
then B  
then D  
then C

d) Who is the winner by the 5-4-3-2-1 Borda count method? d) E

A: 68      D: 55  
B: 67      E: 72  
C: 68

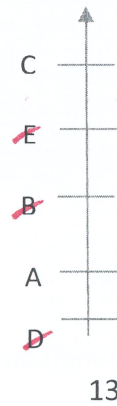
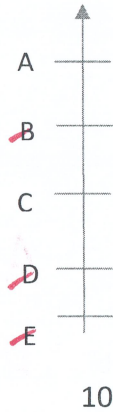
e) Who is the Condorcet winner, if there is one? e) None

$\frac{A \text{ vs } B}{13 | 9}$      $\frac{A \text{ vs } C}{13 | 9}$      $\frac{A \text{ vs } D}{7 | 15}$      $\frac{D \text{ vs } B}{6 | 16}$      $\frac{E \text{ vs } A}{9 | 13}$

f) Based on the information above, who would YOU name as the winner of this election? Why?

Answers vary (preference) provide reason

2. The following are a set of preference schedules used to find a student to represent a school at a state student council meeting. Because of conflicts with other school events, a complete ranking of students is desired. The voters decide to hold a series of runoffs to determine a complete ranking.



a) Who is eliminated first?

a) E

b) Which candidate, if any, receives the first place votes that had been awarded to the student who was eliminated first?

b) N/A

c) Who is eliminated second?

c) B

d) Which candidate receives the first place votes that had been awarded to the student who was eliminated second?

d) A

e) Provide the **complete ranking** of students based on this series of runoff elections below:

1<sup>st</sup> place: C

2<sup>nd</sup> place: A

3<sup>rd</sup> place: D

4<sup>th</sup> place: B

5<sup>th</sup> place: E

3. An election is being held to choose the president of the Math Advisory Club. There are 4 candidates: A, B, C, and D. Each of the 60 members of the club is asked to submit a ballot indicating his or her first, second, third, and fourth choices; ties are not allowed on individual ballots. The 60 ballots submitted are summarized in the table below:

First choice	B	D	C	A	A
Second choice	C	A	D	D	C
Third choice	A	C	A	C	D
Fourth choice	D	B	B	B	B
<b>Number of Voters</b>	<b>20</b>	<b>13</b>	<b>8</b>	<b>3</b>	<b>16</b>

a) Who is the plurality winner?

a) B

b) Who is the winner by the runoff method?

b) A

c) Who is the winner by the sequential runoff method?

c) D

d) Who is the winner by the 4-3-2-1 Borda count method?

d) C

A: 171

C: 172

B: 120

D: 137

e) Who is the Condorcet winner, if there is one?

e) A

A vs. B  
40 | 20

A vs. C  
~~28~~ | 28  
32 | 28

A vs. D  
39 | 21

f) Based on the information above, who would YOU name as the winner of this election? Why?

Verdes with explanation

