1.

a. sequence number = 80 + 127 = 207, source port number = 302, destination port number = 80

b. acknowledgement number = 207, source port number = 80, destination port number = 302

c. acknowledgement number = 127

2.

a. Go-Back-N

A B

1

2

3

4 1

5

1

1

1

2

3

4

5 2

3

4

5

A sends 9 segments, B sends 8 ACKs

Selective Repeat

A B

1

2

3

4 1

5

3

4

5

2

2

A sends 6 segments, B sends 5 ACKs

TCP

A B

1

2

3 2

4

5 2

2

2

2

6

A sends 6 segments, B sends 5 ACKs

b. TCP will delivery all five data segments the fastest due to its fast retransmission feature.

3.

a. Sequence numbers reflect how much data is sent. So the maximum file size is 232 bytes (32 bit wide packet)

b.

4.

a. If the receiver is expecting k, then the receiver must have sent ACKs for k-3, k-2, k-1. If the sender received those ACKs, the sender’s window would be k, k+1, k+2. If the sender didn’t receive those ACKs, the sender’s window would be k-3, k-2, k-1. So the sender’s window is the range from k-3 to k+2 at intervals of 1.

b. Only k-3, k-2, k-1. If the receiver is expecting k and the window size is 3, those are the only 3 that could possibly be in transit.