Q1

- In slow start, a sender doubles its window size every RTT if all sent packets were acknowledged
-
- T/F

Q2

- In steady state, a sender increases its window size by one packet for each acknowledgement
-
- T/F

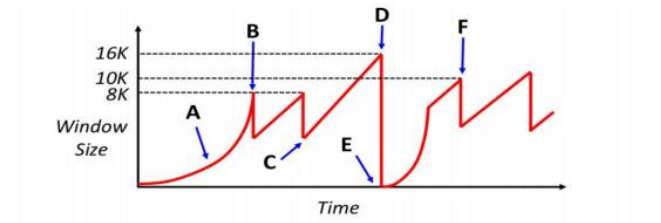
Q3

- A sender that underestimates the round-trip time of a connection may unnecessarily induce a TCP timeout
- T/F

Q4

- After detecting packet loss through a timeout, TCP halves its window size as a response to the path congestion
-
- T/F

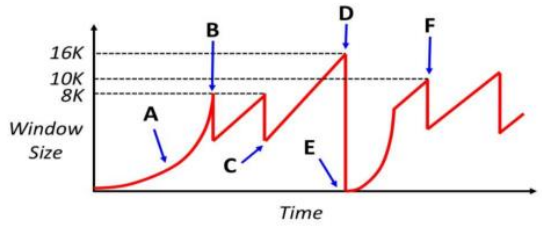
Q5



1. Name the event at B which occurs that causes the sender to decrease its window

(a) Triple Duplicate Ack
(b) Slow Start
(c) Packet loss
(d) Time out

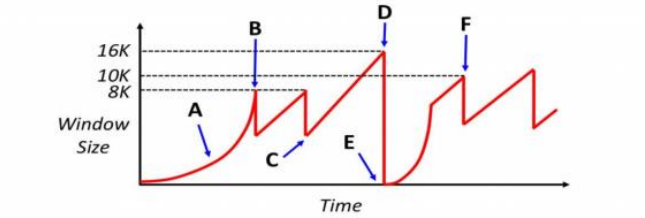
Q6



2. Does the event at B necessitate that the network discarded a packet ?

(a) Yes
(b) No
(c) Don't know

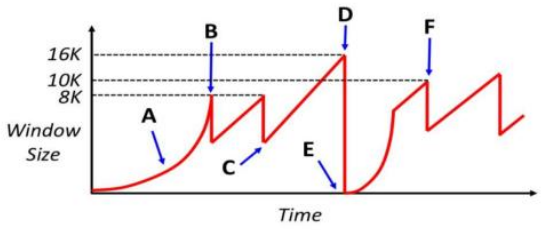
Q7



3. Name the event at D which occurs that causes the sender to decrease its window.

(a) Triple Duplicate Ack
(b) Slow Start
(c) Packet loss
(d) Time out

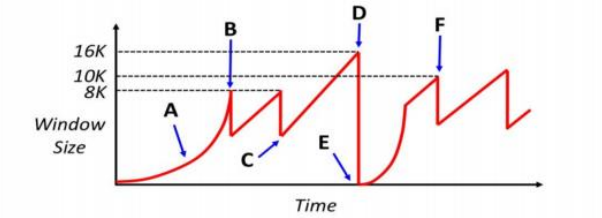
Q8



4. Does the event at D necessitate that the network discarded a packet

(a) Yes
(b) No
(c) Don't know

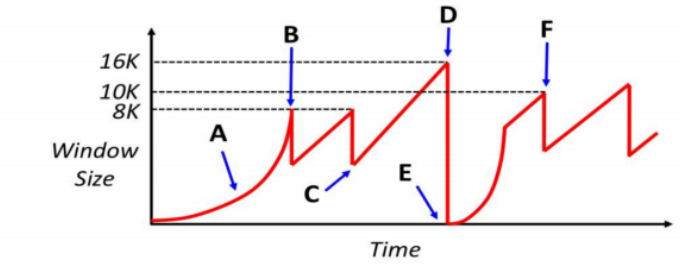
Q9



5. For a lightly-loaded network, is the event at D MORE likely or LESS likely to occur when the sender has multiple TCP segments outstanding

(a) MORE
(b) LESS
(c) ALMOST SAME

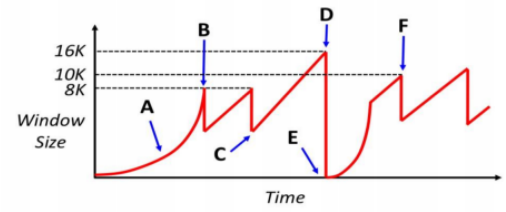
Q10



6. Consider the curved slope labeled by point A. Why does the TCP window behave in such a manner, rather than have a linear slope? (Put another way, why would it be bad if region A had a linear slope?)

The slow start has to find the Maximum throughput as fast as possible OR the additive increase would take Too long

Q11



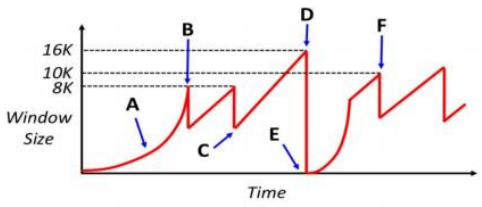
Assume that the network has an MSS of 1000 bytes and the round-trip-time between sender and receiver of 100 milliseconds.

Assume at time 0 the sender attempts to open the connection.

Also assume that the sender can "write" a full window's worth of data instantaneously, so the only latency you need to worry about is the actual propagation delay of the network.

Is This a question?

Q12



RTT = 100ms, MSS = 1000 bytes
7. How much time has progressed by point B ?

(a) 200ms
(b) 300ms
(c) 400ms
(d) 600ms
(e) 700ms

0 – B 8K

8K – 0 = 8K

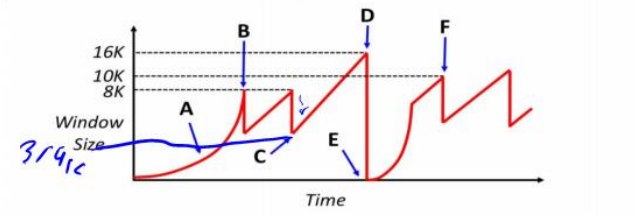
8K = 1 way

RTT = 100ms

½ RTT = 50

8K / 50 = 160

Q13



RTT = 100ms, MSS = 1000 bytes
8. How much time has progressed between points C and D?

(a) 800ms
(b) 1000ms
(c) 1200ms
(d) 1400ms

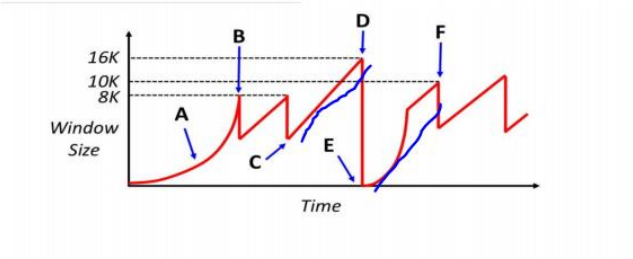
D = 16K

C = ??

16 – 4 = 12K

16 – 3 = 13K

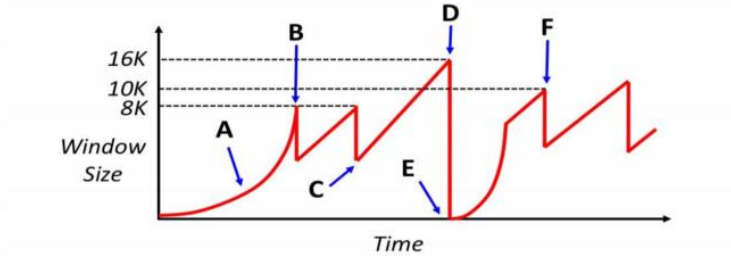
Q14



RTT = 100ms, MSS = 1000 bytes
9. How much time has progressed between points E and F?

(a) 400ms
(b) 600ms
(c) 800ms
(d) 900ms

Q15



10. If the sender shares its network with other clients whose traffic traverses the same IP routers, give one explanation for why point D is higher than point B?

There are Concurrent senders
Changing cross Traffic with
time Router