Let A = unload old passengers (takes 13 minutes)
Let B = unload old cargo (takes 25 minutes)
Let C = clean plane (takes 15 minutes)
Let D = load new cargo (takes 22 minutes)
Let E = load new passengers (takes 27 minutes)

**PRECEDENCE CONSIDERATIONS ARE:**

A must happen before E we write this as A → E
B must happen before D we write this as B → D
B must happen before E we write this as B → E
C must happen before E we write this as C → E
A must happen before C we write this as A → C

PUTTING THE WHOLE THING TOGETHER GIVES:

```
A        C
     E
B                  D
```

**Conclusion:** (State the critical path and the time needed.)
**IDEA # 1:** Build a second jetway exit.

This would reduce the passenger unloading time from 13 minutes down to 7 minutes.

Now the whole thing looks like:

```
  A       C
   
    E
   
  B   D
```

**Conclusion:** (State the critical path and the time needed.)
IDEA #2: Instead of Idea #1, let’s employ more people to clean the plane faster.

This will reduce the old time for C from 15 minutes down to 7 minutes. Below, show a completely labeled precedence diagram and determine the critical path and the time to complete the entire job.

PRECEDENCE DIAGRAM: (Show all precedence relations and times.)

Conclusion: (State the critical path and the time needed.)
IDEA #3: Instead of Idea #2, let’s try employing more people to unload the old cargo faster.

This will reduce the old time for B from 25 minutes down to 15 minutes. Below, show a completely labeled precedence diagram and determine the critical path and the time to complete the entire job.

PRECEDENCE DIAGRAM: (Show all precedence relations and times.)

Conclusion: (State the critical path and the time needed.)
**IDEA #4**: Instead of the previous ideas, let’s try more than just one “fix” at a time. First, we will reduce the passenger unloading time from 13 minutes down to 10 minutes. Second, we will clean the plane, not in 15 minutes, but in 11 minutes. Third, we will load passengers faster. It will take 20 minutes instead of 27 minutes. Below, show a completely labeled precedence diagram and determine the critical path and the time to complete the entire job.

**PRECEDENCE DIAGRAM**: (Show all precedence relations and times.)

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**Conclusion**: (State the critical path and the time needed.)

Of all four ideas #1, #2, #3, #4, which will save the most time compared to the original on the first page? ______

How much time will be saved? ______