# Unit 04 assessment: Knowing what’s required

1. Select one of the engineering case examples as the source of information to form an Engineering specification, and answer the following questions. If you think the case study you have chosen doesn’t provide enough detailed information to form a complete Engineering specification, you can add information to the case, provided that it makes sense and is appropriate to the example.   
   (5 points total)  
     
   **Case 4c Adjustable tool trolley design**  
   * What are 2 basic functions of the product or system?
     1. The Tool Carrier Trolley (TCT) provides workers access to tools and equipment.
     2. The TCT is quickly and easily reconfigured for different height users
   * State functional requirements, quantifying values, for each of these two basic functions of the product or system.
     1. Payload capacity ≤ 100 kg
     2. Range of height adjustment ≤ 500 mm
   * What are 2 non-functional requirements for the product or system?
     1. Easy adjustment by a single worker with minimal effort
     2. Easy to manufacture and implement the TCT addition
   * What are 2 constraint requirements for the product or system?
     1. Maximum improvement cost does not exceed 200 Euros
     2. Meets all safety requirements with self-locking mechanism in both directions
   * Express 1 of the non-functional requirements using a value that can be measured.
     1. Time requirement for single worker adjustment < 30 seconds

Starting with this unit, you have the option of completing Part 1) again for a second case study as an alternative to Part 2). Simply delete Part 2) below, cut and paste a second copy of Part 1), and complete the exercise for another case from this unit.

1. Select one of the engineering case examples as the source of information to form an Engineering specification, and answer the following questions. If you think the case study you have chosen doesn’t provide enough detailed information to form a complete Engineering specification, you can add information to the case, provided that it makes sense and is appropriate to the example.   
   (5 points total)  
     
   **Case 4b: Canadian space agency satellite tracking software**  
   * What are 2 basic functions of the product or system?
     1. It provides a method for transmitting instructions and controls to multiple satellites
     2. It provides an avenue for receiving data generated by the multiple satellites
   * State functional requirements, quantifying values, for each of these two basic functions of the product or system.
     1. Satellite communication distance ≤ 1200 km
     2. Satellite antenna movement accuracy ≤ 0.8 degrees
   * What are 2 non-functional requirements for the product or system?
     1. Easily integrated into the existing CSA system
     2. Runs faster than the previous software, providing more features for the user
   * What are 2 constraint requirements for the product or system?
     1. Maximum development cost does not exceed $25 000
     2. Software can be completed and operational within a 1-year period
   * Express 1 of the non-functional requirements using a value that can be measured.
     1. 1000 km satellite latency from test ping < 600 milliseconds.