COMPREHENSION CHECK 3-1

We frequently express criteria in terms that are not clear and measurable. Write a clear criterion to replace each of these vague criteria for the products.

Product	Computer	Automobile	Bookshelf
Inexpensive	Less than $300		
Small			
Easy to assemble			Requires only a screwdriver
Aesthetically pleasing			
Lightweight			
Safe			
Durable			
Environmentally friendly		Has an estimated MPG of at least 50	

Sample answers – responses may vary.

Criterion	Computer	Automobile	Bookshelf
Inexpensive	Less than $300	Less than 1/5 the median annual U.S. family income	Less than $30
Small	Folds to the size of a DVD case	Two can fit in a standard parking space	Collapses to size of briefcase
Easy to assemble	No assembly: just turn it on	All parts easily replaceable	Requires only a screwdriver
Aesthetically pleasing	Body color options available	Looks like the Batmobile©	Blends well with any decor
Lightweight	Less than one pound	Less than one ton	Less than 5% of the weight of the books it can hold
Safe	Immune to malware	Receives 5 star rating in NCAP crash tests	Stable even if top-loaded
Durable	Survives the "Frisbee® test"	200,000 mile warranty	Immune to cat claws
Environmentally friendly	Contains no heavy metals	Has an estimated MPG of at least 50	Made from recycled materials Low VOC finish

COMPREHENSION CHECK 3-3

Research shows that team performance can be enhanced if team members reflect on their own and their teammates' performance and give each other high-quality feedback. "High-quality" ratings are consistent with observed behavior, which may or may not be "high" ratings. We also know that rating quality (again, consistency with observed behavior) improves with practice. Guided practice in giving and receiving feedback and in practicing self- and peer-evaluations using behavioral criteria will help you improve. Please take your time in evaluating the members of the fictitious team below.

To test your ability to focus on individual behaviors, go to https://www.catme.org/login/survey_instructions and rate each team member on each type of contribution to the team. On the Scenario Results page, a green arrow indicates that your rating matches the expected rating. If your rating does not match the expert rating, the blue arrow shows your rating and the red arrow indicates the rating experts would have assigned. If you count one point for every level separating your rating from the expert rating on the five different types of contribution, a low score is best, indicating the greatest agreement with the expert ratings. You can "mouse over" the red arrows to read the rationales underlying the expert ratings.

Sample answers – responses may vary. List is not prioritized.

PAT
Hindrance: Tended to slow the team down due to difficulty understanding things

Helpful: Always available and willing to do assigned tasks. The individuals who helped explain things to Pat probably developed a deeper understanding of the material in the process, thus this was helpful to them personally, though not to the team directly. Probably the second most useful team member.

CHRIS
Hindrance: Often absent, seldom prepared, seldom contributes, offers excuses for poor performance. Definitely the worst team member.

Helpful: Teaches the other team members about the real world, and how to deal with slackards.

TERRY
Hindrance: Not a team player, impatient, not encouraging to others, wants to dominate the team. Despite cleverness, probably the second worst team member.

Helpful: Solves problems quickly

ROBIN
Hindrance: No obvious hindrance

Helpful: The real leader of the group, kept things going, encouraging to weaker members. The most useful team member.

COMPREHENSION CHECK 3-2

You have been asked to improve the fuel efficiency of an automobile by 20%. Convert this request into engineering criteria. What changes might be made to the automobile to achieve this objective?

Sample answers – responses may vary. List is not prioritized.

Materials
- Durable
- Made recycled material or renewable resources

Landscaping
- Drought tolerant plants
- No invasive species
- Provides cover and food for wildlife
- Minimizes runoff and erosion

Location
- Previously developed property (doesn't destroy pristine area)
- Close to basic necessities (grocery, medical care, etc.)
- Does not interfere with migration paths, endangered species, etc.

Water Usage
- Greywater system
- Rainfall collection system
- High efficiency plumbing fixtures (low flush volume, auto-cutoff faucets)

Energy usage
- On-demand water heaters
- Alternative energy collection (solar, wind, etc.)
- Energy efficient appliances

Indoor air quality
- No outgassing materials
- Radon control
- HEPA filters in HVAC system
- Sufficient outside air exchange

Construction
- Minimize construction waste
- Minimize soil disruption and plant destruction during construction