Example Cognitive Ability Items From Intelligence Testing and Educational Measurement

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“Intelligence” Test Items

Used in human cognitive abilities, child development, genetics, economics research, applications in school psychology (diagnosis)

Relatively “pure” measures of human abilities or traits (minimize multiple factor contamination)

Fluid Intelligence

Superficially different but highly correlated in humans

Induction (examples: figural, verbal, or numerical sets, series, matrices)

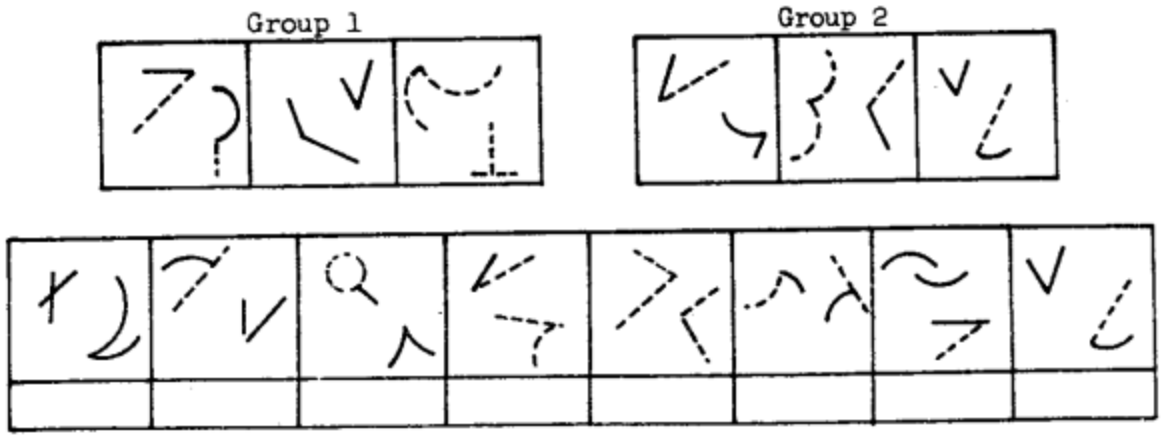
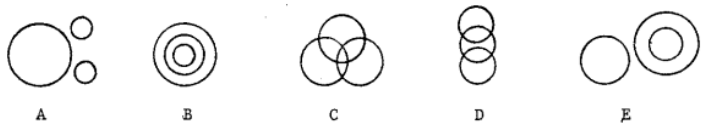


Figure Sets

Sequential Reasoning (Deductive Reasoning) (examples: logical deductions)



Diagramming Relationships

Pines, trees, stones

A B C D E

Quantitative Reasoning (examples: arithmetic word problems)

A cyclist in an international bicycle race covered an average of 9 miles every 20 minutes. If she maintained the same average speed, how long did it take her to cycle the remaining 84 miles of the race?

1 - divide and multiply
2 - subtract and divide
3 - add and subtract
4 - divide and add

Necessary Arithmetic Operations

Crystallized Intelligence

Superficially different but highly correlated in humans

Reading Comprehension

The metal porch swing virtually sizzled on the old wooden front porch today. But we sat there anyway. Gramma wouldn't hear of anything else. I suggested a walk through the forest, hoping to entertain a breeze or two and to take advantage of the shade. Gramma shook her head. You were supposed to sit on the porch after supper, and that's what we were going to do.

This author implies that

A. Gramma cooked supper.

B. Gramma didn't like the forest.

C. Gramma didn't change her routine.

D. Gramma couldn't hear very well

Vocabulary

inclement

1-balmy
2-happy
3-righteous
4-severe
5-apprehensive

Cloze

Several different _____for estimating the approximate functional content of adult human memory have been _____.

Landauer, 1986. *How much do people remember?...Cognitive Science*, 10, 477-493.

“what would happen if the government only allowed people to drive electric cars in cities?”

STUDENT 1

1. Many people would not be able to drive due to economic constraints
2. We would quickly reduce emissions
3. The consumption of fossil fuels would drop drastically.
4. The number of vehicles on the road would drop quickly.
5. More people would use public transportation
6. More low income people would be without vehicles
7. Electricity bills would increase

STUDENT 2

1. gas stations would go out of business
2. it would reduce American dependency on oil
3. it would be much better for the environment
4. the electric company would see increased profits
5. it would lessen the power of oil lobbyists
6. it would lead to legislation about what constitutes a city
7. there would be increased resentment between country and city people

Educational Assessment items

Used in higher education admissions and in large scale educational assessments (PISA, NAEP) to compare school systems outputs (students' knowledge and skills) from different economies, states

Less pure, more complex samples of human knowledge and skill

GRE Logical Reasoning Item

Because the process of freezing food consumes energy, many people keep their electric freezers half empty, using them only to store commercially frozen foods. Yet freezers that are half-empty often consume more energy than they would if they were kept fully stocked. Which of the following, if true, contributes most to an explanation of the apparent discrepancy described above?

(A) A given volume of air in a freezer requires much more energy to be maintained at a temperature below freezing than does an identical volume of frozen food.

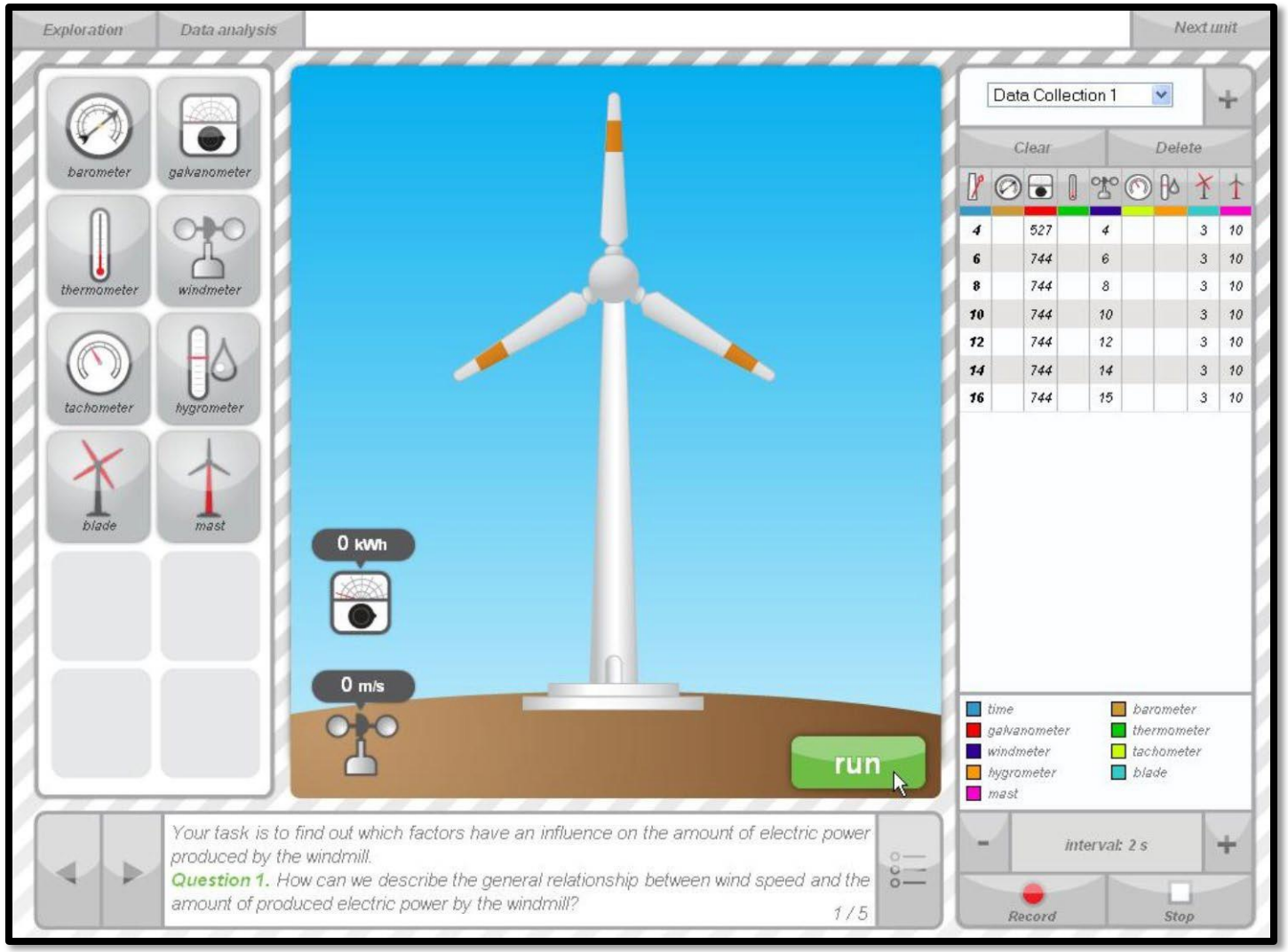
(B) The more often a freezer's door is opened, the more energy is required to maintain that freezer's normal temperature.

(C) When unfrozen foods are placed in a freezer, the average temperature of a given volume of air inside that freezer rises temporarily.

(D) A person who normally maintains a half-empty freezer can cut energy costs considerably by using a freezer that is 50 percent smaller.

(E) An electric freezer can operate efficiently only if chilled air is free to circulate within the freezing compartment.

Core Domain Skills: Science (Prototype)



Transversal Skills: Collaborative PS (PISA 2015)