

Supplementary Information

Comparison of the 7th Grade Students' Accomplishments in Skill and Acquisition Based Assessment-Evaluation

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Appendix A

Sample questions that are appropriate to skill based evaluation questions used in research are given below.

1. *Devices that are used for measuring the magnitude of force are called dynamometer. Dynamometers are tools which are created using the principle of flexibility of springs.*

In the table below, some features are given of D1, D2 and D3 dynamometers known for their equal length of division.

Dynamometer	Number of divisions	Strength value of each compartment
D1	15	3 N
D2	5	3 N
D3	10	5 N



Science teacher Ms. Merve asked from students to answer right/wrong answers given in the table below by advising them to use the table above.

	T/F
1	D1 is the dynamometer which measures the greatest force.
2	If an object with 12 N is measured separately in D1 and D2 dynamometers, the extension ratios of springs will be same.
3	D2 dynamometer makes more precise measurements than other dynamometers..
4	An object with 50 N can be measured by D1 and D3 dynamometers but can't be measured by D2 dynamometer.
5	An object with 40 N can be measured by D1 dynamometer but can't be measured by D2 dynamometer.

Yunus Emre from the 5/A class answered first, second and fourth questions correctly however failed at third and fifth questions.

According to this, which one of these questions are the answers of Yunus Emre?

A)

T
F
T
F
T

B)

F
T
T
F
F

C)

T
F
F
T
T

D)

F
T
F
F
T

2. Science education teacher Mr. Mehmet gives homework after covering the topic of measurement of force and friction. Out of the class; Arda, Burak and Cemre were picked and each one of them were given toy car, meter, dynamometer and chronometer identically. They are asked to bring these tools home with them and start an experiment with their parents. While the experiment is ongoing, teacher gives the worksheet to guide them at home.

NOW IT'S YOUR TURN

- In order to make the experiment, choose a base such as carpet, glass and concrete.
- Attach the dynamometer to the hook at the front side of toy car.
- By applying a certain force, begin to pull the car.
- Record the magnitude of force applied to dynamometer, applying time and length of the way to the table below.

Force (Newton)
Time (seconds)
Length (cm)

Students record the results according to the given table.

Each student's table is given below.

Table of the Arda	
Force (Newton)	12 N
Time (seconds)	8 s
Road (cm)	100 cm

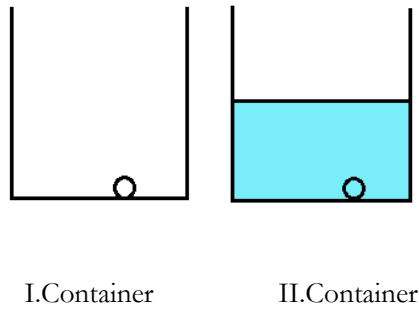
Table of the Burak	
Force (Newton)	10 N
Time (seconds)	8 s
Road (cm)	100 cm

Table of the Cemre	
Force (Newton)	15 N
Time (seconds)	8 s
Road (cm)	100 cm

According to this, as it is surely known that students experimented correctly and utterly and their data is solid, which floor they picked for the experiment?

A)	B)	C)	D)
Arda : Glass	Arda: Concrete	Arda: Glass	Arda: Concrete
Burak: Carpet	Burak: Carpet	Burak: Concrete	Burak: Glass
Cemre: Concrete	Cemre: Glass	Cemre: Carpet	Cemre: Carpet

3. Betül teacher made an experiment in science education class. In the experiment, there are totally two cups with one is filled and one is empty. Teacher dropped an eraser into the cups from same height.



Students observed that eraser from first cup sank much earlier. *According to this which one of these is the purpose of this experiment?*

- A) Measuring the weight of objects
B) Detecting the resistance that water applied to objects
C) Measuring the volume of objects
D) Observing the change in the shape of objects under the influence of force.
4. By a group of Turkish scientist, super slippery tool has been developed. With a special technique, carbon and gold surfaces are being made that doesn't cause friction. When these two surfaces with no friction come together, it was observed that friction force decreased to zero. Scientists claim that by the help of this material energy loss due to friction, therefore, economic losses will be prevented. Moreover, they gave some information about the usage of this technology. Regarding the information given above,
- I. Increased level of friction force can cause corrosion in pieces of machines.
II. Extreme amount of fuel consumption caused by materials which are used in car engines shows the negative effect of friction.

- III. Since this special material minimalize the corrosion in active pieces, this can prolong the lifespan of pieces.
- IV. It can provide fuel efficiency.

Which of these statements can be used?

- A) I and II. B) II and III. C) III and IV. D) I, II, III and IV.

Appendix B

Questions which are appropriate to traditional assessment and evaluation used in the research are given below.

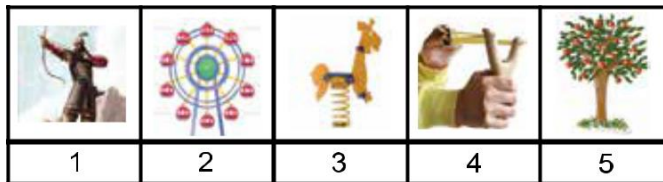
1. I II III IV

			
Shopping cart pushing motion get	The box from the ground take up lift right	Standing football hit the ball	Student's bag on your back on the straight road carry without shaking

In which of the situations given above, work has been done in terms of science?

- A) I ve II. B) II ve III. C) I, II ve III. D) I, II, III ve IV

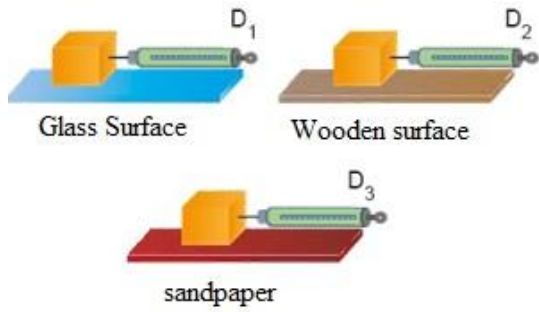
2.



Which of the situations given in the figure have elastic potential energy?

- A) 1, 3 ve 4 B) 1, 2 ve 5 C) 2,3 ve 4 D) 3,4 ve 5

3. Bilge will move identical objects on 3 different surfaces as in the image. It will measure the force it needs to provide movement with identical dynamometers.



When Bilge things set in motion, the order of magnitude of the values (D_1 , D_2 and D_3) indicated by the dynamo-meters would be like in which option?

- A) $D_1 > D_2 > D_3$ B) $D_2 > D_1 > D_3$ C) $D_3 > D_1 > D_2$ D) $D_3 > D_2 > D_1$