

Critical Thinking Skills

Simple Machines

Skills For Critical Thinking		Reading Comprehension							Hands-on Activities
		Section 1	Section 2	Section 3	Section 4	Section 5	Section 6	Section 7	
LEVEL 1 Remembering	<ul style="list-style-type: none"> List Details/Facts Recall Information Match Vocab. to Definitions Define Vocabulary Label Diagrams Recognize Validity (T/F) 	✓	✓	✓	✓	✓	✓	✓	✓
LEVEL 2 Understanding	<ul style="list-style-type: none"> Demonstrate Understanding Explain Scientific Causation Rephrasing Vocab. Meaning Describe Classify into Scientific Groups 	✓	✓	✓	✓	✓	✓	✓	✓
LEVEL 3 Applying	<ul style="list-style-type: none"> Application to Own Life Model Scientific Process Organize & Classify Facts Use Alternative Research Tools 	✓	✓	✓	✓	✓	✓	✓	✓
LEVEL 4 Analysing	<ul style="list-style-type: none"> Distinguish Roles/Meanings Make Inferences Draw Conclusions Based on Facts Provided Classify Based on Facts Researched State & Defend an Opinion Compile Research Information Design & Application Create & Construct Imagine self in Scientific Role 	✓	✓	✓	✓	✓	✓	✓	✓

Based on Bloom's Taxonomy



Wheel and Axles and Pulleys

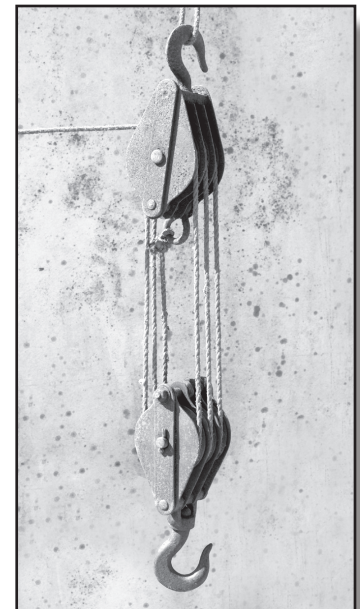
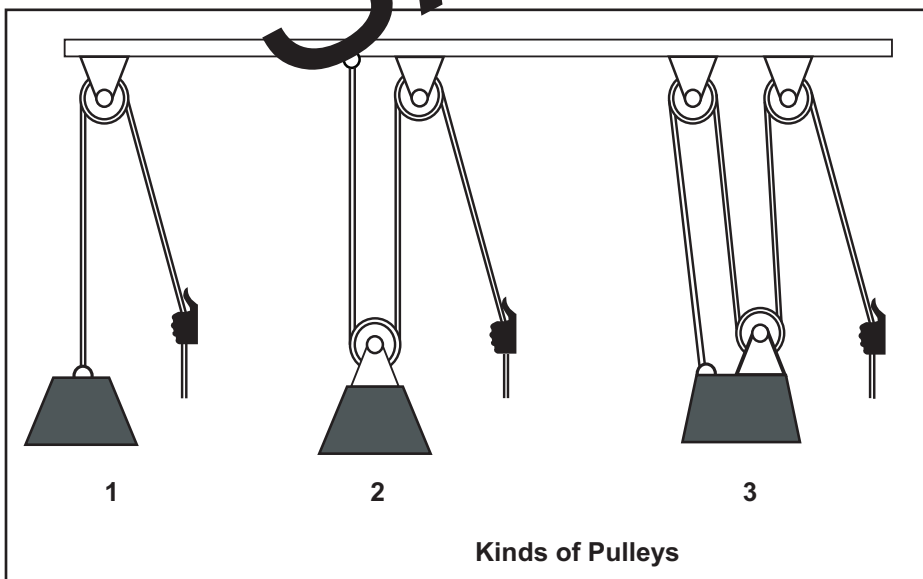
Pulleys

Pulleys use wheels in a different way. Pulley wheels are used to change the direction of force. Also, pulley wheels spin freely around their axles. Different kinds of pulleys are shown below.

Look at the different kinds of pulleys. Pulley number 1 changes the direction of the effort force, but the effort force is equal to the resistance force. With the number 2 set of pulleys, the effort force is only half the resistance force, but you have to pull two feet of rope to raise the load one foot. With the number 3 set of pulleys, the effort force is one-third the resistance force, but you have to pull three feet of rope to raise the load one foot.

Look at the three pulley arrangements again. Count the number of ropes attached to the weight. The more ropes that are attached to the weight, the less force you have to exert and the more rope you have to pull, than always the way with simple machines. When the machine makes it easier to do something, it also makes you do more of it.

The cords that raise or open window curtains or blinds sometimes run through pulleys. The rope that raises a flag goes over a pulley at the top of the flag pole.



Across:

- 1. effort
- 3. pulley
- 5. simple
- 6. work
- 8. screw
- 11. motion
- 12. lever
- 14. watt
- 15. axle
- 17. machine
- 18. force

Down:

- 2. friction
- 3. planes
- 4. newton
- 6. wheel
- 7. distance
- 9. wedge
- 10. resistance
- 13. exert
- 16. pivot

Word Search Answers

B	G	K	R	O	W	E	D	G	E	P
H	A	T	T	Q	F	W	C	J	L	Q
E	N	O	I	T	O	M	D	L	R	R
E	C	L	E	R	E	X	E	E	M	F
C	R	M	L	R	S	V	S	F	K	U
D	J	N	L	A	R	I	F	N	T	L
T	R	F	X	A	S	Y	R	O	E	C
D	K	N	P	T	O	Z	V	T	R	C
F	E	N	A	O	S	E	G	E	E	R
S	C	R	E	A	P	S	H	N	N	R
N	E	R	A	L	V	Y	B	D	N	S
E	N	E	R	G	W	E	E	L	U	P

Part A

- 1) True
- 2) False
- 3) False
- 4) True
- 5) True
- 6) False
- 7) False

Part B

- 1) B
- 2) C
- 3) D

Part C

1.

In any order:

lever –
Answers will vary
(i.e. bottle opener).

wheel and axle –
Answers will vary
(i.e. doorknob).

pulley –
Answers will vary
(i.e. flagpole rope).

inclined plane –
Answers will vary
(i.e. wheelchair ramp).

wedge –
Answers will vary
(i.e. knife).

screw –
Answers will vary
(i.e. corkscrew).

2.

Answers will vary
(i.e. axe, made of lever
and wedge)

3.

Answers will vary
(i.e. increase force,
decrease force, change
direction of force)

4.

wedge and screw



Bicycle - A Compound Machine



Mountain Bike