

Correlation of SCAN'S Report with Physics in Context © 2001

	Foundation Skills	Basic Skills	Thinking Skills	Personal Qualities	Basic Competencies	Resources	Interpersonal	Information	System	Technology
Cpt. 1, Force		X	X	X		X	X	X	X	X
1. Describe, in your own words, what force is.		X	X	X		X	X	X	X	X
2. Give examples of complex technological devices where force must be controlled, measured or applied.		X	X	X		X	X	X	X	X
3. Describe what force, pressure, voltage and temperature difference have in common.		X	X	X		X	X	X	X	X
4. Describe or predict what happens to an object when forces on it are balanced and when forces on it are unbalanced.		X	X	X		X	X	X	X	X
5. Measure force in mechanical, fluid, electrical and thermal systems.		X	X	X		X	X	X	X	X
6. List occupations that require technicians to measure, control, or otherwise deal with force in complex devices.		X	X	X		X	X	X	X	X
Cpt. 2, Work										
1. Describe what's meant by work in general. Then describe work in mechanical, fluid and electrical systems.		X	X	X		X	X	X	X	X
2. Describe how work in mechanical, fluid and electrical systems involves the presence of force and movement.		X	X	X		X	X	X	X	X
3. Identify correct S1 and English units for work in mechanical, fluid and electrical systems.		X	X	X		X	X	X	X	X
4. Identify the effects of work done in mechanical, fluid and electrical systems.		X	X	X		X	X	X	X	X
5. Measure work in mechanical, fluid and electrical systems.		X	X	X		X	X	X	X	X
Cpt. 3, Rate										
1. Describe what's meant by rate in general. Describe rate in mechanical, fluid, electrical and thermal systems.		X	X	X		X	X	X	X	X
2. Identify appropriate S1 and English units for rate in all four energy systems.		X	X	X		X	X	X	X	X
3. Measure rate in mechanical, fluid, electrical and thermal systems.		X	X	X		X	X	X	X	X
4. Identify workplace applications where rate is measured and/or controlled.		X	X	X		X	X	X	X	X
Cpt. 4, Resistance										
1. Describe what's meant by resistance in general. Then describe resistance in mechanical, fluid, electrical and thermal energy systems.		X	X	X		X	X	X	X	X
2. Explain how resistance in each energy system relates to the unifying principle of a "force" divided by a rate.		X	X	X		X	X	X	X	X
3. Identify correct S1 and English units for resistance in each energy system.		X	X	X		X	X	X	X	X
4. Identify good and bad effects of resistance in each energy system.		X	X	X		X	X	X	X	X
5. Identify workplace applications where technicians measure or control resistance.		X	X	X		X	X	X	X	X
6. Measure resistance in mechanical, fluid, electrical and thermal energy system.		X	X	X		X	X	X	X	X

Cpt.5, Energy									
1. Describe the nature of energy in mechanical, fluid, electrical and thermal systems.	X	X	X		X	X	X	X	X
2. Describe what's meant by "potential energy."	X	X	X		X	X	X	X	X
3. Describe what's meant by "kinetic energy."	X	X	X		X	X	X	X	X
4. Describe the relationship between potential energy, kinetic energy and heat energy in the conservation-of-energy law.	X	X	X		X	X	X	X	X
5. Describe the relationship between work and energy.	X	X	X		X	X	X	X	X
6. Identify appropriate S1 and English units for energy in each system.	X	X	X		X	X	X	X	X
7. Measure energy in each system.	X	X	X		X	X	X	X	X
8. Identify workplace applications where technicians measure or control energy.	X	X	X		X	X	X	X	X
Cpt. 6, Power									
1. Describe what's meant by power in general. Also describe power in mechanical, fluid, electrical and thermal systems.	X	X	X		X	X	X	X	X
2. Explain how thermal power and thermal rate are the same.	X	X	X		X	X	X	X	X
3. Explain how power in each energy system relates to the unifying principle of work divided by time.	X	X	X		X	X	X	X	X
4. Explain why power also can be described in terms of a "force" times a rate for mechanical, fluid and electrical systems.	X	X	X		X	X	X	X	X
5. Identify technical workplace applications where technicians measure or control power.	X	X	X		X	X	X	X	X
Cpt 7, Momentum									
1. Describe linear momentum and tell what it depends on.	X	X	X		X	X	X	X	X
2. Describe angular momentum and tell what it depends on.	X	X	X		X	X	X	X	X
3. Describe impulse and tell what it depends on.		X	X	X		X	X	X	X
4. State the law of conservation of momentum as it affects linear or angular motion.		X	X	X		X	X	X	X
5. Describe the relationship of impulse to change in momentum.		X	X	X		X	X	X	X
6. List examples of how momentum affects mechanical and fluid systems.		X	X	X		X	X	X	X
Cpt.8, Waves and Vibrations									
1. Describe wave motion in general.		X	X	X		X	X	X	X
2. Describe how waves transmit (move) energy.		X	X	X		X	X	X	X
3. List the characteristics that are used to describe a wave.		X	X	X		X	X	X	X
4. Distinguish between longitudinal and transverse waves.		X	X	X		X	X	X	X
5. Identify workplace applications where waves and vibrations are found.		X	X	X		X	X	X	X

Cpt. 9, Radiation									
1. Describe what's meant by "radiation".	X	X	X		X	X	X	X	X
2. Describe what's meant by "electromagnetic" radiation.	X	X	X		X	X	X	X	X
3. Describe what's meant by "nuclear" radiation.	X	X	X		X	X	X	X	X
4. Identify workplace applications where technicians measure or control radiation.	X	X	X		X	X	X	X	X
Unit 13, Light and Optical Systems	X	X	X		X	X	X	X	X
1. Describe how light can be represented by light rays.	X	X	X		X	X	X	X	X
2. Describe how light can be represented by waves.	X	X	X		X	X	X	X	X
3. Identify the special characteristics of laser light.	X	X	X		X	X	X	X	X
4. List several optical systems that "process" light.	X	X	X		X	X	X	X	X
5. Identify workplace applications where technicians measure and control light.	X	X	X	X	X	X	X	X	X
Cpt. 10 Time Constants									
1. Distinguish between uniform change and nonuniform change.	X	X	X		X	X	X	X	X
2. Define a "time constant".	X	X	X		X	X	X	X	X
3. Identify systems where time constants are needed to describe system behavior.	X	X	X		X	X	X	X	X
4. Define three time constants (labeled "T _{1/2} " "T ₉₀ " and "τ")	X	X	X		X	X	X	X	X
5. Give examples of time constants in mechanical, fluid, electrical and thermal energy systems.	X	X	X		X	X	X	X	X
6. Identify workplace applications where technicians measure and control time constants.	X	X	X		X	X	X	X	X