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| MSQ Unit 85 | QCF Ref: Y/504/4251 |
| Title: | **Machines for Marine Engineers** |
| Level: | **3** |
| Credit value: | **4** |
| Learning outcomes - *The learner will:* | Assessment criteria - *The learner can:* |
| 1. Be able to solve problems involving friction
 | * 1. Explain the nature of friction and the laws of dry friction
	2. Describe the difference between ‘static’ and ‘dynamic’ friction
	3. Derive the coefficient of friction
	4. Apply the laws of friction to movement in a horizontal plane
	5. Describe the effect of lubricating two surfaces in contact with each other
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| 1. Be able to apply concepts relating to the efficiency of machines
 | * 1. Define a machine
	2. Describe the effect known as mechanical advantage
	3. Describe the effect known as velocity ratio
	4. Calculate the efficiency of a machine
	5. Derive the linear law as it applies to machines (E=aW+C)
	6. Explain why the efficiency of a machine cannot reach 100%
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| 1. Be able to explain the construction of simple machines
 | * 1. Explain the construction of a differential wheel and axle
	2. Explain the construction of a Weston differential pulley block
	3. Explain the construction of Screw jacks
	4. Explain the construction of a Crabwinch
	5. Explain the construction of a Worm and wheel
	6. Explain the construction of Rope-pulley blocks
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| **Additional information about the unit** |  |
| Unit aim(s) | To provide a basic knowledge and understanding of friction and simple machines |
| Unit expiry date |  |
| Details of the relationship between the unit and relevant national occupational standards (if appropriate) | MNTB NOS (Jan 2006) – C11 Prepare and operate vessel propulsion machinery and ancillary systemsC12 Operate vessel auxiliaries and service machineryC34 Carry out maintenance of vessel mechanical machinery and systems |
| Details of the relationship between the unit and other standards or curricula (if appropriate) | Maritime and Coastguard Agency Marine Guidance Notice regarding Certificates of Competency – Engine Department,  |
| Assessment requirements specified by a sector or regulatory body (if appropriate) | Maritime Skills Alliance Assessment StrategyMCA Certification requirements |
| Endorsement of the unit by a sector or other appropriate body (if required) | MCA…. |
| Location of the unit within the subject/sector classification system | Transportation |
| Name of the organisation submitting the unit | Scottish Qualifications Authority |
| Availability for use |  |
| Availability for delivery |  |
| Guided Learning Hours | 36 |