



Province of the  
EASTERN CAPE  
EDUCATION

**DIRECTORATE SENIOR CURRICULUM MANAGEMENT (SEN-FET)**

**HOME SCHOOLING SELF-STUDY WORKSHEET**

<b>SUBJECT</b>	<b>FITTING &amp; MACHINING</b>	<b>GRADE</b>	12	<b>DATE</b>	JUNE 2020
<b>TOPIC</b>	<b>FORCES &amp; MAINTENANCE SPECIFIC</b>	<b>TERM 1 REVISION</b>	()	<b>TERM 2 CONTENT</b>	(√)
<b>TIME ALLOCATION</b>	2 hrs.	<p style="text-align: center;"><b><u>TIPS TO KEEP HEALTHY</u></b></p> <ol style="list-style-type: none"><li>1. <b>WASH YOUR HANDS</b> thoroughly with soap and water for at least 20 seconds. Alternatively, use hand sanitizer with an alcohol content of at least 60%.</li><li>2. <b>PRACTICE SOCIAL DISTANCING</b> – keep a distance of 1m away from other people.</li><li>3. <b>PRACTISE GOOD RESPIRATORY HYGIENE:</b> cough or sneeze into your elbow or tissue and dispose of the tissue immediately after use.</li><li>4. <b>TRY NOT TO TOUCH YOUR FACE.</b> The virus can be transferred from your hands to your nose, mouth and eyes. It can then enter your body and make you sick.</li><li>5. <b>STAY AT HOME.</b></li></ol>			
<b>INSTRUCTIONS</b>	ANSWER ALL QUESTIONS				

### QUESTION 1

1.1 FIGURE 1 below shows a system of forces with four co-planar forces acting on a point. Use calculations and determine the magnitude and direction of the resultant force for this system of forces.

Show ALL the horizontal and vertical components before doing the calculations.

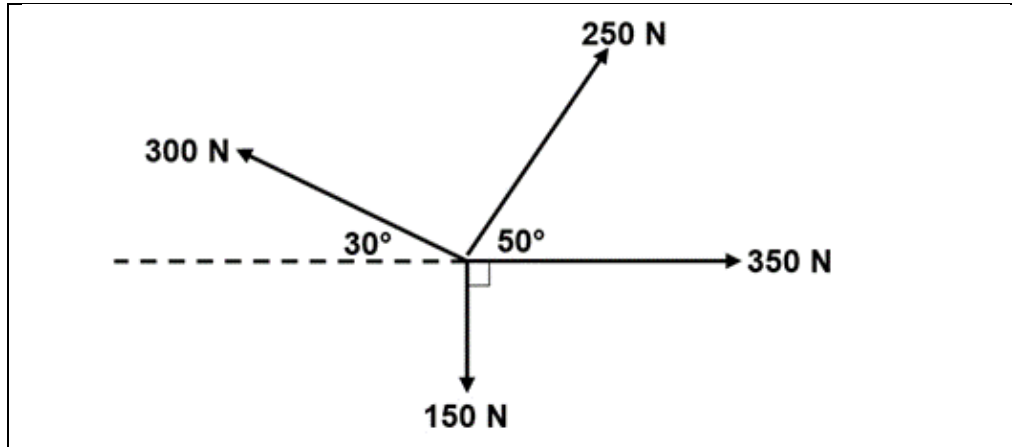


FIGURE 1

1.2 FIGURE 2 below shows a system of forces with four coplanar forces acting onto the same point. Use calculations and determine the magnitude and direction of the equilibrant of this system of forces.

Show ALL the horizontal and vertical components before you do the calculations.

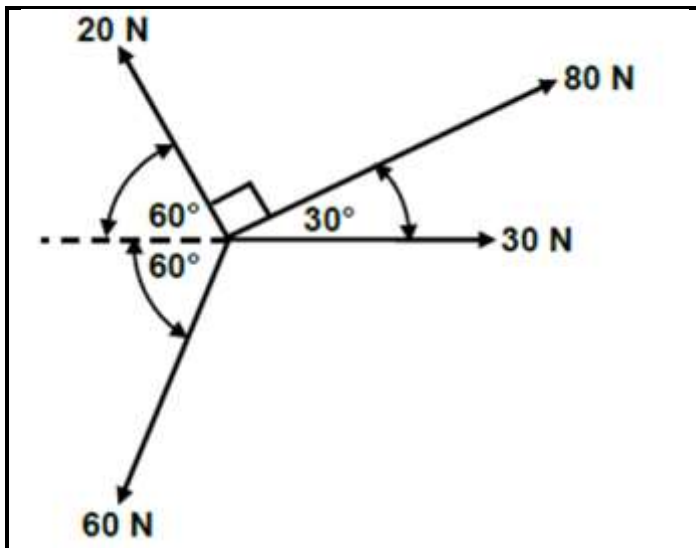


FIGURE 2

1.3 FIGURE 3 below shows a system of forces with four coplanar forces acting on the same point. Calculate the magnitude and direction of the equilibrant of this system of forces.

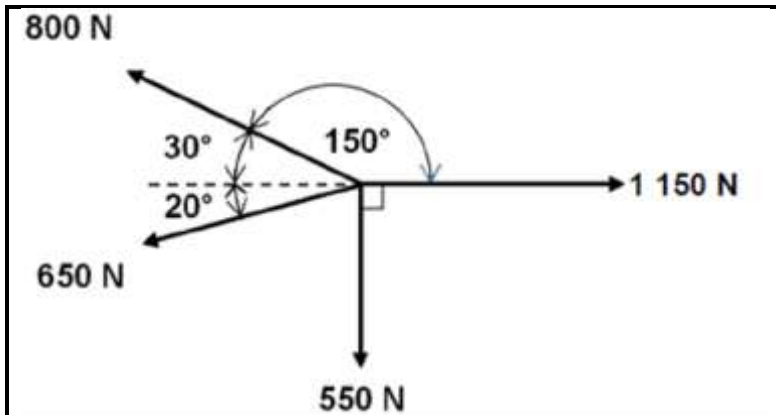


FIGURE 3

## **QUESTION 2**

2.1 State THREE results of a lack of preventative maintenance of mechanical drive systems.

2.2 Give TWO reasons for the malfunctioning of chain drives.

2.3 State TWO procedures that can be followed to reduce the wear on a belt drive system.

2.4 Briefly explain the procedure to replace a belt on a belt drive system.

2.5 State ONE property of EACH of the following materials:

2.5.1 Polyvinyl chloride (PVC)

2.5.2 Carbon fibre

2.6 Classify the following materials as either thermoplastic composites or thermo hardened (thermosetting) composites:

2.6.1 Teflon

2.6.2 Vesconite

2.6.3 Bakelite

2.7 Does rubber or thermo composites have a lower coefficient of friction?

## **QUESTION 3**

3.1 State THREE types of maintenance procedures used on mechanical systems.

3.2 State TWO causes of the malfunctioning of belt drive systems.

3.3 Briefly explain the procedure to replace the chain on a chain drive system.

3.4 State TWO procedures to reduce the wear on a gear drive system.

3.5 State ONE use of EACH of the following materials:

3.5.1 Nylon

3.5.2 Glass fibre/Glass fibre

3.6 Classify the following material as thermoplastic composites or thermo-hardened (thermo-setting) composites:

3.6.1 Teflon

3.6.2 Bakelite

3.7 Name any TWO factors that influence the coefficient of friction between two surfaces.

#### **QUESTION 4**

4.1 State THREE results of a lack of preventative maintenance on mechanical systems.

4.2 State TWO causes of the malfunctioning of chain drive systems.

4.3 State TWO procedures to reduce wear on a belt drive system.

4.4 Explain the procedure to replace the belt on a flat belt drive system.

4.5 State ONE property of EACH of the following materials:

4.5.1 Polyvinyl chloride (PVC)

4.5.2 Carbon fibre

4.6 State the main difference between thermoplastic composites and thermo-hardened (thermosetting) composites.

4.7 Give TWO examples of thermo-hardened composites.