

Pearson BTEC Level 1 / Level 2 Tech Awards

Write your name here Surname	Forename	Level 1/2		
Learner Registration Number	Centre Number			
Engineeri	ng	Part 1		
Set task: Responding to a Part 1	n Engineering Brief	Marks		
Sample assessment mater September 2017	rial for first teaching	Supervised hours		

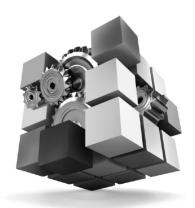
Instructions

- This is Part 1 of the set task for learners to carry out the practical process and complete the activity.
- This task and answer booklet contains material for the completion of the practical process and activity based on this under supervised conditions.
- O Part 1 of the set task is out of 30 marks.
- This task and answer booklet is specific to each series and this material must be issued only to learners who have been entered to take the task in the specified series.
- This booklet should be kept securely until the start of the 2 hour supervised assessment period.
- The set task should be undertaken in the period timetabled by Pearson.

Paper reference XXXX/XX S58605A

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Instructions for teachers

This assessment is made up of two parts. **Part 1** consists of a practical process and associated activity.

Both parts of the set task are completed during a one week period timetabled by Pearson. **Part 1** is to be completed in one session of 2 hours within the first four days of the timetabled period. **Part 2** is to be completed in one session on the Friday of the timetabled period.

The practical process requires a demonstration by the teacher. This should be carried out immediately before the start of the supervised session and does not make up part of the 2 supervised hours.

Learners' practical process is undertaken in the supervised hours given. Learners will need access to the materials as listed in the *Instructions for teachers* document.

Learners must then complete the activity using this task and answer booklet. Learners should take calculators into the supervised session.

This is a formal external assessment and must be conducted with reference to the instructions in this task and answer booklet and the *Information* for Conducting External Assessments (ICEA) document, to ensure that the supervised session is conducted correctly and that learners have the opportunity to carry out the required activities independently.

Teachers are responsible for maintaining security and for reporting issues to Pearson.

In particular:

- only permitted materials can be brought into the supervised environment
- materials must be kept securely and no items removed from the supervised environment.

After the session, the teacher will confirm that all learner work has been completed independently as part of the authentication submitted to Pearson.

Outcomes for submission

Part 1 task and answer booklet should be kept securely and submitted with the Part 2 task and answer booklet.

Each learner must complete an authentication sheet.

Instructions for learners

Check that these materials have been provided for you:

- 300 mm wooden or 1 metre plastic supporting ruler for weight support
- two rubber bands of different sizes
- weight hanger hook
- 50 g and 100 g weights
- o metre ruler or tape measure for measurement.

Before the task begins you will have a demonstration by your teacher. Observe the demonstration carefully in order to complete the set task. You should take notes and refer to your notes to complete the set task as given in the set task information.

Read the set task information carefully.

You must plan your time and submit all the required evidence at the end of the supervised session. Your centre will advise of the timing for the supervised session.

You will complete this set task under supervision and your work will be kept securely during any breaks taken.

You must work independently throughout the supervised session and must not share your work with other learners.

You may use a calculator when carrying out the activities.

Outcomes for submission

You must complete the set tasks in this task and answer book.

You must complete an authentication sheet.

Set task information

Engineering brief

Helicopters are often used to deliver emergency food or medical supplies. It is important that the supplies can be delivered quickly and safely to drop zones so that the supplies can be unloaded and used by aid workers.

Engineers are investigating using elasticated ropes to lower the supplies from the helicopter to the ground to see how high they would need to hover. You have been asked to carry out research to model different types of elasticated ropes.



© Paula Bronstein/Getty Images

Within your organisation you have been asked to investigate how rubber bands of different length and thickness respond to different loads.

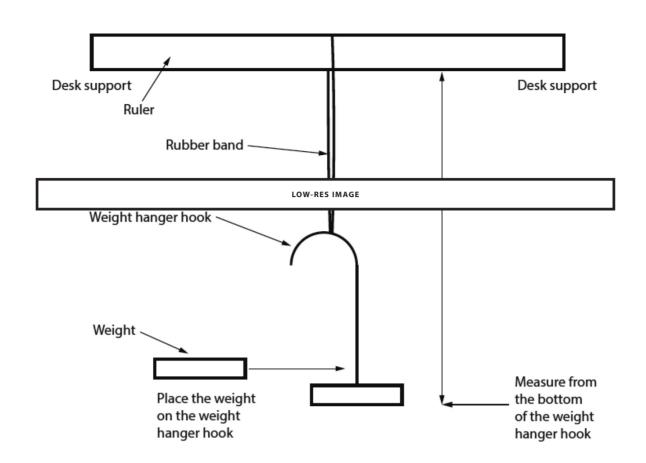
The following materials have been provided for you:

- 300 mm wooden or 1 metre plastic supporting ruler for weight support
- two rubber bands of different sizes
- weight hanger hook
- 50 g and 100 g weights
- metre ruler or tape measure for measurement.

You can refer to your notes from the teacher demonstration.

Follow this testing process and record your results in Activity 1a.

- 1. Move the first rubber band to the centre of the supporting ruler.
- 2. Place the weight hanger hook onto the first rubber band.
- 3. Measure the distance from the bottom of the supporting ruler to the bottom of the weight hanger hook.
- 4. Record the extension of the rubber band in the table in Activity 1a. Make sure you record the unit for the extension measurement.
- 5. Choose the amount of weight to add to the hanger.
- 6. Place the weight onto the weight hanger hook and support the weight as it stretches the rubber band.
- 7. Measure the distance from the bottom of the supporting ruler to the bottom of the weight hanger hook.
- 8. Record the load and extension in the table in Activity 1a.
- 9. Repeat stages 5–8 as many times as necessary.
- 10. Note anything else you observed about the effect of adding weights to the weight hanger hook, other than the extension of the rubber band.



Repeat stages 1–10 for the second rubber band.

You should spend 45 minutes carrying out your investigation.

Activity 1a: Recording results and observations from your tests

Record **all** your results in the table and give observations of the effect of adding weights to the weight hanger hook, other than the extension of the rubber band.

Add the missing unit to the extension columns on the tables.

Rubber band 1	
Load (grams)	Extension []
Rubber band 2	•
Load (grams)	Extension []

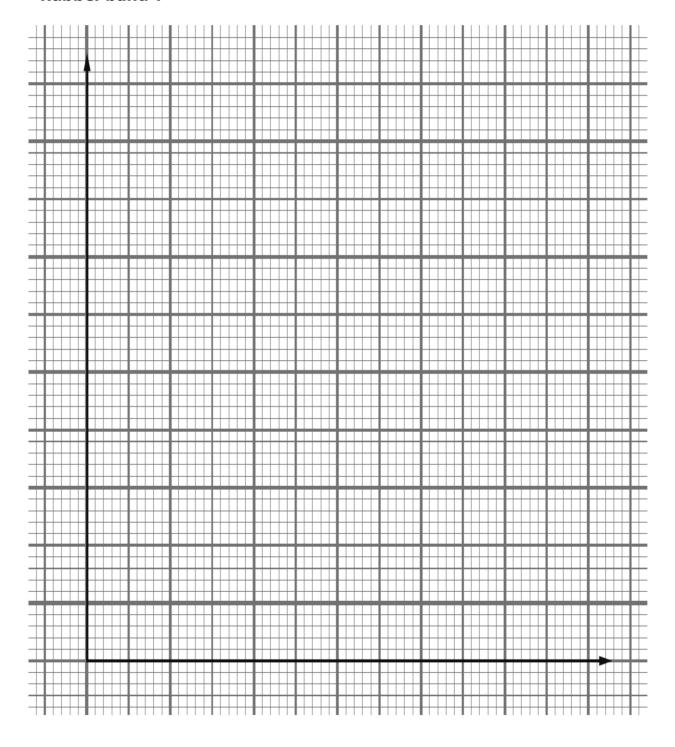
You should	spend 15 mi	nutes completi	ng the table for A	ctivity 1a.
			Total for Activ	ity 1a = 6 ma

Activity 1b: Processing results

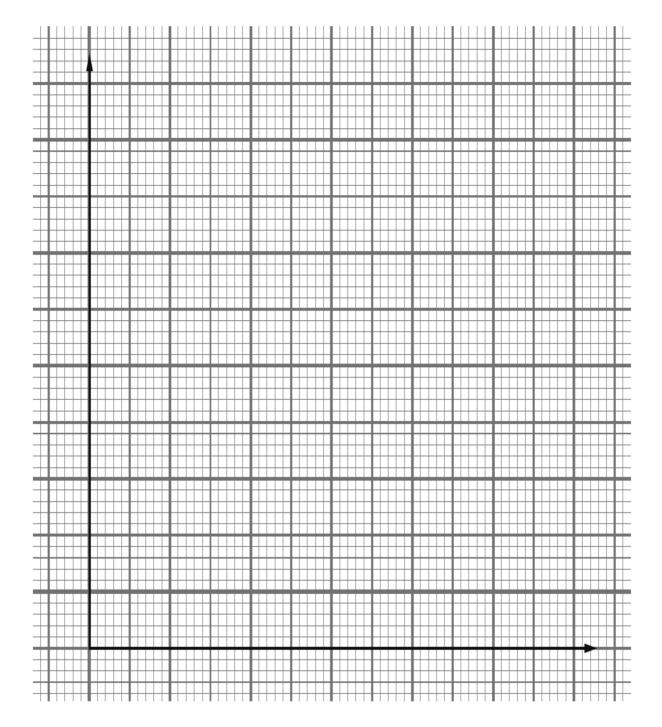
Draw a graph of load against extension and plot a line of best fit for each rubber band.

Use the headings and units from your tables in Activity 1a to label each axis.

Rubber band 1



Rubber band 2



You should spend 20 minutes completing Activity 1b.

Total for Activity 1b = 8 marks

Compare the patterns in your tables and graphs. What conclusions can be drawn from your data?					
viviat correlation	is carried aravi	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	data.		
You s	hould spend 2	20 minutes	completing A	ctivity 1c.	

	ns did you encou	inter with sett	ing up the test,	carrying out the
	rding results?			
If you carried	out the test agai	n, what would	l you do differer	itly?

. . .

Total for Activity 1d = 8 marks