

Activity R3

Moments: sometimes, always, never true: teacher and trainer notes

This short activity can be used to monitor and assess understanding of moments. You could also use it as an extension or reinforcement activity at the end of a topic on moments or as a revision activity. It is a useful way to check learners' familiarity with, and usage of, the spoken and written terminology as well as their understanding of the subject.

The activity requires learners to draw on their knowledge and understanding and to discuss and decide with colleagues whether statements about moments and couples are 'sometimes true', 'always true' or 'never true'.

Grouping tasks such as this are referred to by Petty¹ as 'Decisions, decisions' activities. They require learners to use high level skills such as comparison and evaluation to make judgements. This process helps learners to make links between new and old knowledge and to classify, or order, their understanding into concepts.

Sorting, grouping, ranking and sequencing tasks promote and reinforce deep learning at all levels, particularly when used in a supportive group work environment where learners can learn from each other. This helps to clarify and internalise understanding. 'Decisions, decisions' activities such as this one are not necessarily difficult but they demand high level thinking skills. They are also easy to adapt to a wide range of learning situations.

Learning objectives

Learners should be able to:

- demonstrate their understanding of moments
- develop confidence in using precise technical terminology.

¹ Petty, G. *Teaching Today: A Practical Guide*, 3rd edition, Nelson Thornes, 2004.

Materials required

Approach 1:

- moments and couples grid sheet (Sheet A) and solutions sheet (Sheet B) for each learner.

Approach 2:

- moments cards and header cards for each pair/group
- solutions sheet (Sheet B) for each learner.

The numbers on the statements and cards have no relevance and are only to help teachers and trainers identify statements during discussions with learners.

Example session plan from CD ROM *Resources*.

Time needed

Between 15 and 20 minutes.

Starting points

This activity requires learners to have prior knowledge of the principle of moments, relevant definitions and also some experience of applying the principles.

Learners may be more familiar with the term 'torque', and this gives you an opportunity to discuss the similarities and differences between the two terms. 'Moments' tends to be used when approaching the topic of the turning effect of a force from a scientific point of view. 'Torque' is used in everyday language by engineers.

The more opportunities you can provide for learners to use a range of technical vocabulary orally and in written form, the more confident they will become in their understanding. Many teachers and trainers expect learners to get into the habit of creating and using an ongoing technical glossary during their training in order to promote correct language use.

Suggested approach

There are two differentiated approaches outlined for this activity and you should choose the approach most suited to your learners. Approach 1 requires learners to explain their understanding in writing. Approach 2 requires learners to explain their understanding orally. In the latter case, you might return to the moments and couples grid sheet (Sheet A) as a revision activity later when learners are more confident.

Look at the answer sheet (Sheet B) before you start the activity. Some statements are deliberately vague to ensure that they fall into the 'sometimes true' category. This can open up a discussion about the importance of using precise technical terminology rather than vague general terms. Learners should appreciate the potential for misunderstanding and the consequences of this in a work environment.

If couples are not part of your scheme of work you may wish to open the electronic version of the moments and couples grid sheet on the CD ROM *Resources* and delete statements referring to couples, or to shade statements that are not relevant for learners at present.

Approach 1: using the moments and couples grid sheet (Sheet A)

Working in pairs or groups of three, learners discuss and agree whether each statement is 'sometimes true', 'always true' or 'never true'. They then complete the middle column of the learner sheet with S, A or N. Learners then have to explain why they think this is the case by completing a reason in the right hand column.

It is not necessarily completing the sheet that is of paramount importance but, rather, the process of using the sheet as a prompt for discussion to draw out and develop understanding. Peer to peer explanations, or 'teaching others' is a powerful way of developing deep learning.

While learners are working, you have the opportunity to facilitate and monitor the learning. For example, by asking open questions you can encourage learners to clarify and refine the concepts.

Approach 2: using the header strip and moments cards

Working in pairs or groups of three, learners discuss each moments card in turn and decide under which header to place it. Groups should be able to explain their reasoning for each statement.

Consolidating and checking learning

Whichever approach you use, it is important to summarise and bring closure to the activity and to check that everyone understands.

There are many ways to manage the summary, but you could do it by asking groups to provide feedback on one

statement. In this case you might keep a tally of each statement and the numbers agreeing or disagreeing with the reasons given. You could then focus discussion on areas of disagreement or misunderstanding.

Finally, you may wish to distribute copies of the solutions sheet for the moments grid (Sheet B) for learners' folders.

What learners might do next

Learners could work on supplementary questions from textbooks or past exam questions. There are many examples of self-assessed work on moments available on the internet. One example can be found at:

www.ngsir.netfirms.com/englishhtm/Torque.htm

(This link was active and working at the time of going to press. It cannot be guaranteed that the page has not been moved or changed since publication. If the Java applet fails to load, try downloading the latest version from java.com/en/)

Adapting the approach

Sorting, grouping, ranking and sequencing tasks promote and reinforce deep learning at all levels, particularly when used in a supportive group-work environment where learners can learn from each other. This helps to clarify and internalise understanding.

You can adapt this approach very easily to any curriculum area or topic. For example, for each of these statements say which is sometimes true, always true or never true.

- A person drops a ball from the top of the mast of a ship. It will hit the deck at the foot of the mast.
- A person drops the ball from the top of a mast of a ship travelling at a constant velocity. It will hit the deck at the foot of the mast. (Air resistance is negligible.)
- A person drops a ball from the top of a mast of an accelerating ship. It will hit the deck at the foot of the mast. (Point out that the ship is not rolling or the ball would move sideways!)