

## Curriculum links

Stage	Year	Australian Curriculum
Stage 4	Year 7	<p>Change to an object's motion is caused by unbalanced forces, including Earth's gravitational attraction, acting on the object (ACSSU117)</p> <p>People use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity (ACSHE121)</p> <ul style="list-style-type: none"> <li>• <i>considering how sports scientists apply knowledge of forces to improve performance</i></li> </ul>
	Year 8	<p>Energy appears in different forms, including movement (kinetic energy), heat and potential energy, and energy transformations and transfers cause change within systems (ACSSU155)</p>
Stage 5	Year 9	<p>Advances in scientific understanding often rely on technological advances and are often linked to scientific discoveries (ACSHE158)</p> <p>People use scientific knowledge to evaluate whether they accept claims, explanations or predictions, and advances in science can affect people's lives, including generating new career opportunities (ACSHE160)</p> <ul style="list-style-type: none"> <li>• <i>using knowledge of science to test claims made in advertising or expressed in the media</i></li> <li>• <i>recognising aspects of science, engineering and technology within careers (sport science)</i></li> </ul>
	Year 10	<p>Energy conservation in a system can be explained by describing energy transfers and transformations (ACSSU190)</p> <p>The motion of objects can be described and predicted using the laws of physics (ACSSU229)</p>
Stage 6	Year 11/12	<p>Vertical motion is analysed by assuming the acceleration due to gravity is constant near Earth's surface (ACSPH062)</p>

## Investigative skills:

**Year 7:** ACSIS124, ACSIS125, ACSIS126, ACSIS129, ACSIS130, ACSIS132

**Year 8:** ACSIS139, ACSIS140, ACSIS141, ACSIS145, ACSIS234

**Year 9:** ACSIS164, ACSIS165, ACSIS169

**Year 10:** ACSIS198, ACSIS199, ACSIS203, ACSIS204

## Learning outcomes

-Gain a stronger intuition for conservation of energy, including defending the theory from apparent violations

-Gain experience with efficiency concepts

-Improve inquiry skills

## Part 1 (factors affecting efficiency of a bounce)

### Guidance

Stage	Demonstrated inquiry	Prescribed inquiry	Structured inquiry	Guided inquiry	Open inquiry
Formulate, question and predict	No question	Provided question	Sharpened question	Learner selects	Learner poses questions
Plan	No planning	Provided procedure	Discussion with teacher	Guided during planning	Learner determines plans
Conduct	Teacher conducts	Conducting and recording method told	Sharpened plan and conduct	Guided during conducting and recording	Learner conducts and records
Process and analyse	Teacher analyses	Analysis method told	Discussed analysis	Guided analysis	Learner analyses data studying trends
Reason, solve and link back	No problem solving	Teacher provides reasoning and links	Discussed reasoning and conclusion	Guided reasoning and formulating conclusion	Learner reasons to formulate conclusions
Communicate and justify	No conclusion	Teacher writes conclusion	Student writes	Guided justification and findings	Learner justifies findings and conclusions

## Part 2 (double drop)

### Guidance

Stage	Demonstrated inquiry	Prescribed inquiry	Structured inquiry	Guided inquiry	Open inquiry
Formulate, question and predict	No question	Provided question	Sharpened question	Learner selects	Learner poses questions
Plan	No planning	Provided procedure	Discussion with teacher	Guided during planning	Learner determines plans
Conduct	Teacher conducts	Conducting and recording method told	Sharpened plan and conduct	Guided during conducting and recording	Learner conducts and records
Process and analyse	Teacher analyses	Analysis method told	Discussed analysis	Guided analysis	Learner analyses data studying trends
Reason, solve and link back	No problem solving	Teacher provides reasoning and links	Discussed reasoning and conclusion	Guided reasoning and formulating conclusion	Learner reasons to formulate conclusions
Communicate and justify	No conclusion	Teacher writes conclusion	Student writes	Guided justification and findings	Learner justifies findings and conclusions