Year 5

MATHS RESOURCE

This work is a derivative of Hot Air Balloon Flight - Fields Farm & Brown Moss Cottages courtesy by William Hook on Flickr

Agriculture in Education: an educational resource for the Year 5 Maths curriculum

Measurement and Geometry – Location and transformation

(CC BY 2.0)

(CC0 Public Domain)

(CC BY 2.0)

This project is funded by the Australian Government, Department of Education and Training, through the Agriculture in Education Initiative.

AGRIFOOD SKILLS AUSTRALIA

Resource 1: Agriculture in Maths to Design a Farm

	Content Descriptor:	
Mathss	Use a grid reference system to describe locations. Describe routes using landmarks and directional language.	ACMMG113

learn

Learning Outcome/s

- Able to create and use a legend to describe a landmark on a map.
- Use directional language to describe a route.
- Use a grid reference system to locate and / or reference landmarks on a map.

Description

This resource aims to provide a context for teachers to introduce students to grid references and directional language.

It provides student activities, teaching strategies and assessment.

The context involves planning and plotting on a map a fictional farm that employs sustainable farming practices with a variety of crops and animals. After designing their farm students will use directions and coordinates to specify where particular objects are located and to describe pathways.

The resource is ideally suited to fit into a unit of work with an agriculture theme such as Get Your Hands On My Food. However, the degree to which sustainable farming is used in this activity is completely flexible. The activities may be carried out independent of the sustainability focus if it does not fit with the teaching programme.

Overview:

- Directed Teaching Activity 1 – Teacher will provide instruction and demonstrate how a grid reference is used with a map. Directional language will be introduced and a simple directed activity will be undertaken to scaffold understanding.
- Work Task 1 – Students design a farm by drawing it onto a grid map, adding scale and referencing the features using a legend.
- Work Task 2 – Students describe, using directional language and grid references, a day's journey going about their farm tasks. Students exchange maps and follow each other's directions to complete a day's work on the farm. Students will be encouraged to comment on the scale used. This task may serve as an assessment of the learning outcomes.

discuss

Setting the scene

If this resource were being used as standalone, it would be advisable to first find out what students know about farming. To provide a better context for the learning some useful resources to set the scene for this task include:

web

http://www.target100.com.au/Tips-resources/Sustainability-study-guides especially this one: http://www.target100.com.au/files/55f48669-8f47-480d-83bb-a38500dd8907/Target-100-Primary-School-Science-and-Sustainability-Study-Guide.pdf

http://www.eastershow.com.au/teacher-resources/primary-school-resources/

http://splash.abc.net.au/media/-/m/153078/a-sustainable-vineyard-with-sheep-

work task

Teacher Directed Activity: Compass Pathways

This is a simple, but fun and engaging activity to introduce students to grid references and directional language. It requires a basketball or netball court or similar and a simple grid map of the court. The teacher will also need to, ahead of time, place twelve tokens at various grid positions on the court. The tokens can be anything as long as each one can be individually identified. A colourful Worksheet One (1) plus tokens is supplied with this resource which may be printed, laminated and sliced into tokens. Or you could use a variety of objects such as witches hats.

work task

Part A

- Provide each student with a copy of the court Court Grid for students
- Place tokens on the court as per the teacher grid map supplied.
- Lead students onto the court. Explain that they each have a map of the court and scattered around the court are various tokens. Their task is to find each one and mark on their map where each one is located. Direct the students to spread out and move by themselves around the court without speaking to any other student during this activity. (Silence for this activity will ensure each student is having to engage in the activity)
- Pair and Share: Ask students in pairs to compare their answers and change any answers if needed so that they both agree. Then each pair should share with a second pair and discuss any discrepancies.
- As a whole group discuss the answers with students. This is a good opportunity to also discuss what the scale is for this grid map given that a basketball court is 28m by 15m.

Part B

- This part of the activity involves using directional language. Note which direction is north on the grid map (this may or may not be the true north direction). Give each pair of students one of the direction cards. They are to follow the directions on the card and mark on their grid map the route which they take. Students can exchange cards when they have completed one route with another pair and repeat the exercise. (Suggest that a different coloured pen is used to draw each route). The two pairs should then compare their maps to see if they agree.

work task

Work Task 1: Designing your farm

Provide students with the following instructions

- You have been given a large section of land which has been mostly cleared and which you are going to develop into a sustainable farm. You have a Student Map of the land. Use your map to plan your farm which must include at least the following features:
  - 4 cropping paddocks
  - 2 large grazing paddocks – one for sheep and one for cattle or dairy cows
  - A barn
  - Trees and hedges
  - A dam
  - Farm house
  - Outbuildings and machinery sheds
  - A chicken yard
- On your map draw your farm showing each of these features as if you were looking down from an airplane. When designing your farm think about water, wind, sunshine and shelter for your crops and animals. The Sustainability Cards (refer to Powerpoint included in the Resource) will give you some very useful information to help with your decisions.
- Create a legend for your farm so that each feature can be identified.
- Be prepared to share and explain your decisions to the class.

work task

Work Task 2: Sharing a walk around your farm by providing directions using your farm map.

The following are instructions for the students

- On your farm map you need to add a scale and grid references.
  - To make your grid references, number each row on the left hand side of your map and add letters across the top of each column.
  - Mark on your map the scale you are using: for example, the length of one square grid might be equal to 20 metres.
  - Write your scale next to your legend.

  The compass on your map tells you which way is north, south, east and west.

E.g. scale
☐ = 20m

- You are the farmer. You start each day at your farmhouse. Use the Farm Worksheet provided to:
  - Write down all of the daily farming tasks that you will do.
    Hint: Daily tasks might include feeding chickens and collecting eggs, feeding the cattle, checking the sheep, watering crops, planting crops, returning to farmhouse for lunch, harvesting, mending machinery, fixing fences and milking cows.
  - Write a set of directions using compass and grid references to describe the path you take each day to complete your daily tasks.
    e.g. Leave farmhouse and head west to 23B.
    Return to farmhouse then head north to 16K.
  - Now exchange your directions and map with a partner. On your partners map draw in the pathway that he/she has described.
  - Match each location you are directed to, to one of the tasks that your partner has listed.
    eg. 23B – Feed chickens and collect eggs
    16K – Feed the cattle
  - Compare your notes and discuss the answers with your partner.
    What can you say about the scale used by your partner? Was it reasonable, too small or too long?
    How sustainable are your farms? What features have you included that make you think this?

Supporting materials for: Measurement and Geometry-Location and Transformation

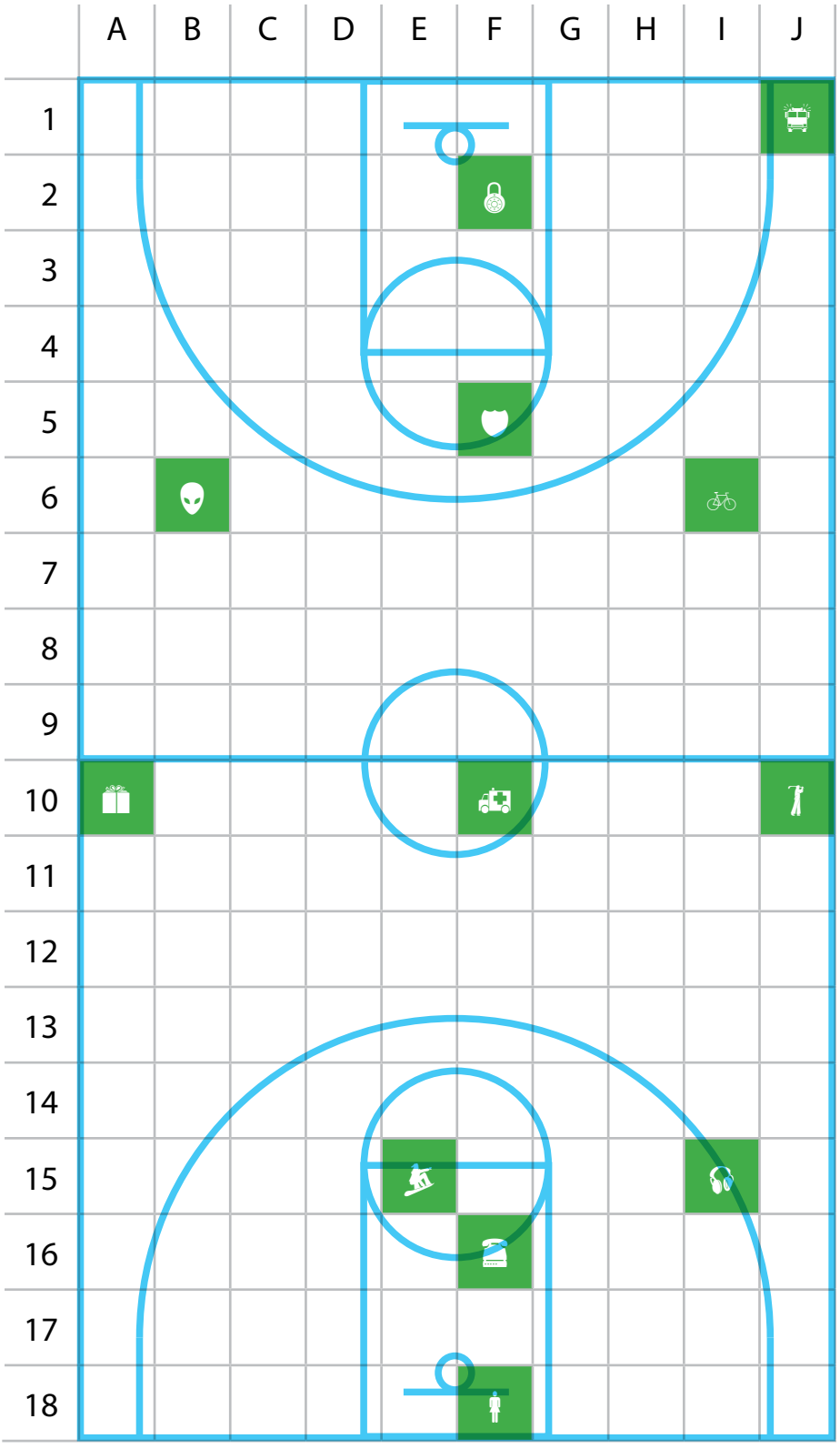
Location and Transforamtion Activity Compass Pathways Cards Powerpoint

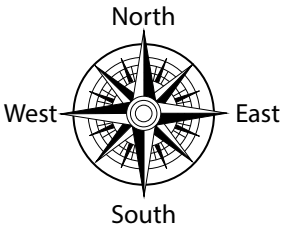
Location and Transforamtion Activity Compass Pathways Cards Word Version

Habitat and Sustainability Cards Powerpoint

Habitat and Sustainability Cards Word Version

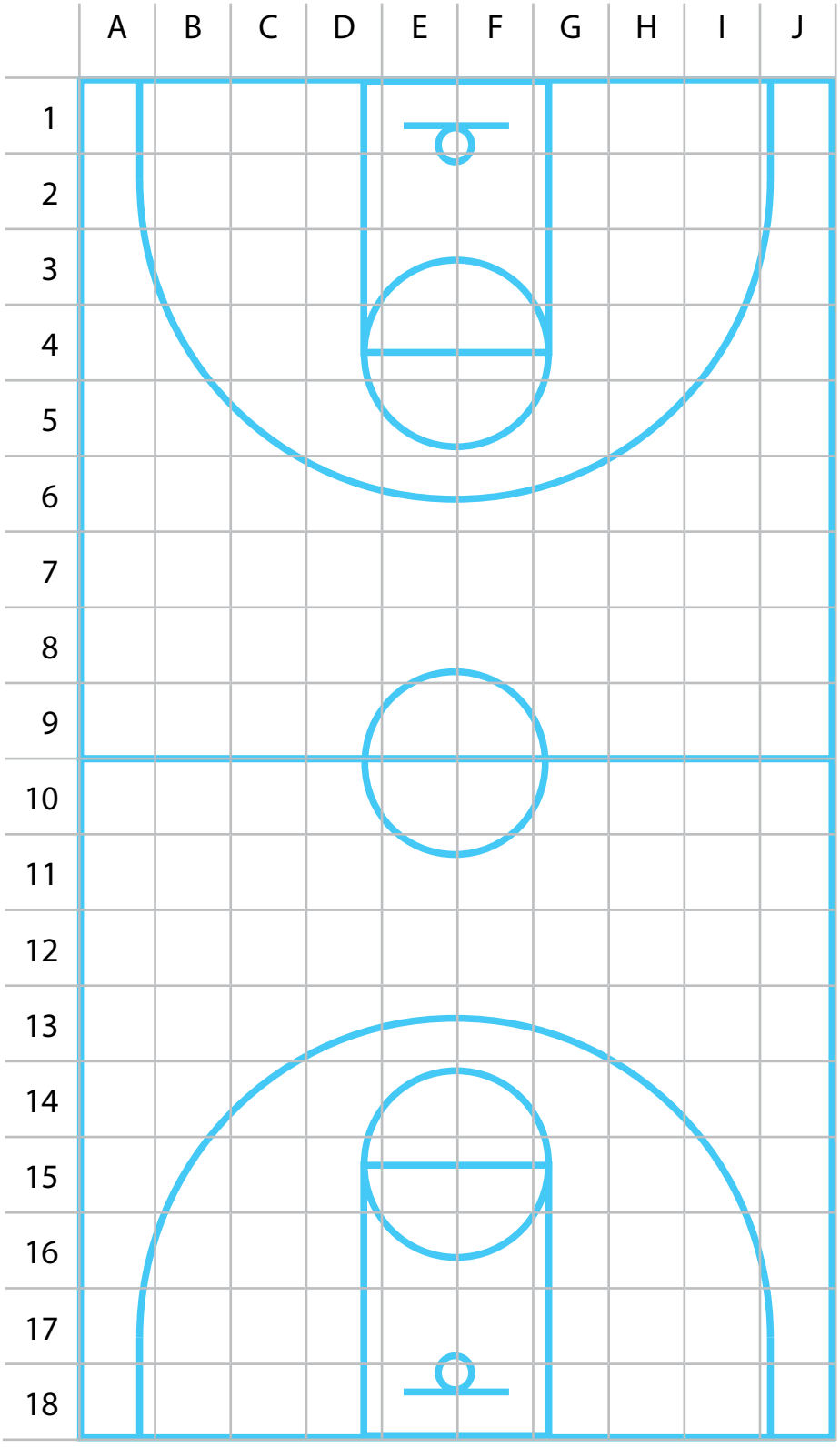
Grid Map (Teacher Copy)

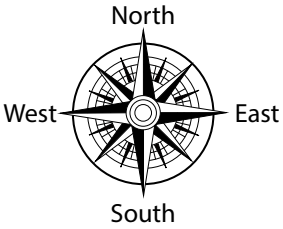


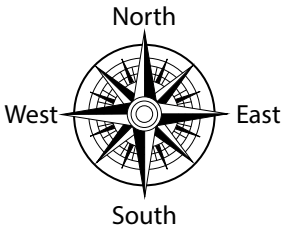


Symbols/Tokens

Student Court Grid Map







Student Map

Legend

Cropped Paddock		Grazed Paddock		Dam		Farmhouse	
Tree / Hedge		Chicken Yard		Barn		Outbuildings	

Scale: _____

Farm Worksheet

List of daily tasks. Write them here but not in the same order as your directions:

My Daily Farm Tasks	Directions
A	I leave the farmhouse and head …
B	
C	
D	
E	
F	
G	
H	
I	
J	

Now look at the daily task that your partner has listed above. Match these tasks to A, B, C, ... etc

Produced by

AGRIFOOD SKILLS AUSTRALIA

AgriFood Skills Australia

General inquiries:
Phone: 02 6163 7200
Fax: 02 6162 0610
Email: reception@agrifoodskills.net.au
Web: www.agrifoodskills.net.au

Location
Level 3, 10-12 Brisbane Avenue
Barton
ACT 2600

Postal address
PO Box 5450
Kingston
ACT 2604

Developed by John Tucker c/o AgriFood Skills Australia

© AgriFood Skills Australia 2015

This work is licensed under a Creative Commons Attribution 3.0 Australia licence
(except where indicated otherwise).

Cover images

This work is a derivative of Hot Air Balloon Flight - Fields Farm & Brown Moss Cottages courtesy by William Hook on Flickr

This work is a derivative of powerful-combinations-of-fruits-and-vegetables-for-healthy-life-part-1 courtesy by Honolulu Media on Flickr
(CC BY 2.0)

Courtesy of Pixabay (no attribution required)
CC0 Public Domain

This work is a derivative of Mooo courtesy by Viktor_U_Cat on Flickr
(CC BY 2.0)