Becky Falls

Teacher's Pack
Key Stage 3

GEOGRAPHY

Answers

Geography Key Stage 3 Fieldwork Worksheet

Rivers:

1. Is the water fresh or salty? (test its resistance or specific gravity) **FRESH**

2. Do you know where the water is coming from? **A SPRING ON DARTMOOR**

3. Which direction is the water flowing (uphill or downhill)? **DOWNHILL**

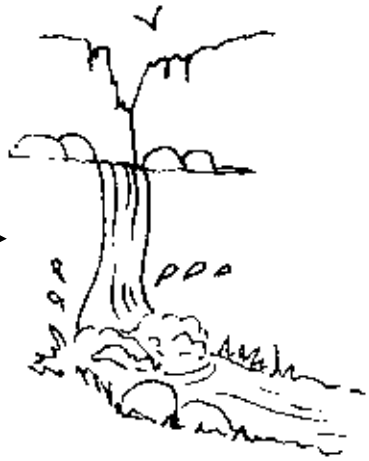
4. How wide is the channel? Take 3 measurements, find an AVERAGE. | | | | =

5. Is the river clear or cloudy – is it carrying a 'load' of *sediment*?

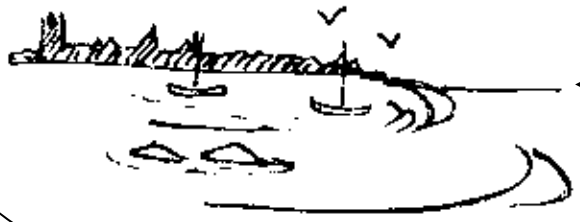
6. Which part of the river are we looking at? (See below) **UPPER**

Head – water comes out of the earth from a spring or a bog.

Upper – water flows rapidly down a steep slope in a steep-sided valley, there are rapids and waterfalls. River is small – often called a stream or brook. The river bed is made up of large grains of gravel or stones.



Middle – water flows more slowly and often meanders, sediment on the bed is finer, other streams have joined to make a river.



Lower – water flows very slow, land is flat, river takes up a wide flood plain and meets the sea.

Find a slow-flowing part of the river:

1. What is the *river bed* made of? Sand Gravel, Stones, Boulders. **SAND/GRAVEL**

2. What are the *banks* made of?  **SOIL/BOULDERS**

3. Have they been eroded? What signs of erosion can you see?

4. Draw a diagram of the river showing the banks and bed (*river profile*) in the box at the bottom of this sheet.

5. Take measurements of 10 randomly chosen stones from the river bed and find the MEAN.

										Mean =

Find a fast-flowing part of the river:

6. What is the *river bed* made of? Sand, Gravel, Stones, Boulders **STONES/BOULDERS**

7. What are the banks made of? **SOIL/BOULDERS**

8. Have they been eroded? What signs of erosion can you see?

9. Draw a diagram of the river showing the banks and bed (*river profile*) in the box at the bottom of this sheet.

10. Take measurements of 10 randomly chosen stones from the river bed and find the MEAN.

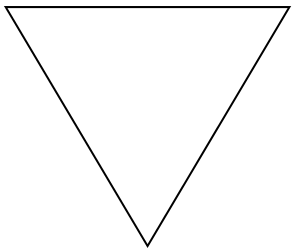
										Mean =

11. Is the river bed sediment larger or smaller than in the slow-flowing part? **LARGER**

12. Why do you think that is? **THE WATER HAS MORE POWER TO CARRY LARGE PARTICLES**

River profile—slow-flowing

River profile—fast-flowing

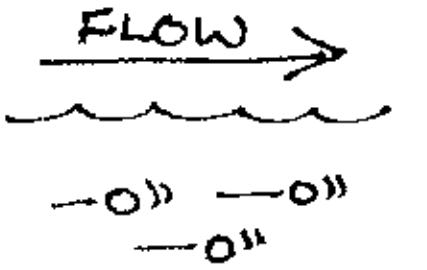


13. How do the two river profiles differ?

SLOW - WIDE AND SHALLOW, FAST - NARROW AND STEEP SIDED

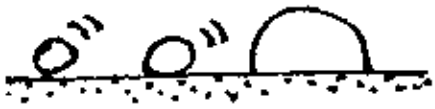
How much sediment can the river carry?

Power of the river to carry sediment



Using coloured pebbles of different size class: 2mm, 5mm, 10mm, 25mm, throw around 5 of the largest size into the river at a given point and see if they move.

Measure the distance they move.



Repeat with the other size classes, gradually working towards the smallest size.

Retrieve the pebbles for future use (use a net). Try the same exercise in different flows e.g. inside and outside of a bend, fast flowing/slow flowing stretches of river.

Record your results here:

	Fast	Slow	Inside bend	Outside bend
Which size was carried along in the water body?				
Which size rolled along the bottom?				
Which size landed on the bottom and stayed there?				

Record the maximum distance the pebbles travelled from the point you dropped them in.

	Fast	Slow	Inside bend	Outside bend
25mm				
10mm				
5mm				
2mm				

Describe the differences in the size of particles carried in each part of the river:

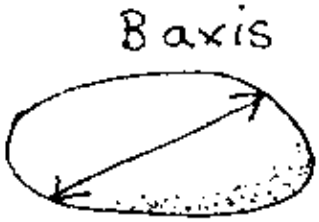
LARGER PARTICLES ARE FOUND IN FASTER AREAS OF THE RIVER AND ON THE OUTSIDE OF BENDS.

Why you think there is a difference?

FASTER FLOWS CAN CARRY MORE LOAD

What load has the river carried?

Choose an area of the river where you can gain access to the sediments on the bed. Take a random sample of the pebbles on the bottom of the river. Measure the 'B' axis and take a mean from 5-10 pebbles. Compare this to another part of the river. Take measurements on a bend by comparing sediment size on the inside of the bend and the outside.



Is there a variation in pebble size across the width of the river?

YES/NO (DEPENDS ON WHERE YOU RECORD)

Is there more variation in pebble size across the width of a river on a bend?

YES - THE OUTSIDE OF THE RIVER HAS A FASTER CURRENT AND LARGER PARTICLES

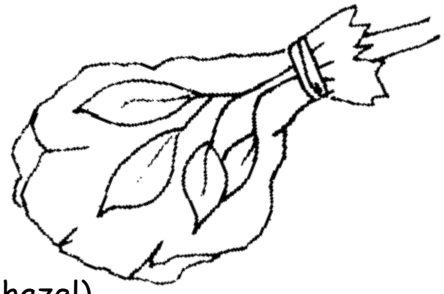
Is there a difference between the pebble size in fast and slow stretches of the river?

YES - FASTER STRETCHES HAVE LARGER PARTICLES

What part of the sediment was missed by this method?

FINE ONES LIKE SAND AND FINE GRAVELS

Water Cycle:



Transpiration experiment:

Take a clear plastic bag and weigh it. Put it over a tree branch and seal around the neck – leave for 1 hour. (Choose a tree that is in the sun and has large leaves e.g. oak, beech or hazel).

1. What is inside the bag? **WATER**

2. Where did it come from?

3. Weigh the bag and measure the leaf surface area (use graph paper) to find out how much water was lost per leaf in 1 hour? =

Total Leaf area	=	cm^2
Weight of bag before	=	gm
Weight of bag after 1 hour	=	gm
Difference in weight of bag before/after =		gm

Total Leaf Area ÷ Weight of water =

(1 gm of water = 1 cm^3 of water)

4. How does what you have seen link to the *water cycle*? (see illustration)

Answers

Activity 1 - carrying capacity:

1. Size of sponge	Weight of sponge	Time taken to discharge water

2. Can you make the sponge hold more water? **No**

3. Why do think that is? **It can only hold its carrying capacity**

Activity 2 - River Formation:

1. Where is the main area of erosion? **At the beginning of the river**

2. Where is the main area of deposition? **At the end of the river**

3. Did your 'river' sort out the sediments into different sizes? **Yes (may not)**

Which end of the river had the largest sediments? **Top (no difference)**

Which end of the river had the smallest sediments? **Bottom (no difference)**

Map Activity:

For this activity you will need OS Maps 1:25,000 Explorer: OL28 Dartmoor and 110 Torquay and Dawlish

1. Can you find Britain on the globe?

2. Can you find Devon on the map of Britain?

3. Can you find Dartmoor on the map of Devon?

4. Can you find Becky Falls on the OS 1:25,000 map?

5. How high is Becky Falls above sea level? (look at the contours) **210-220 metres**

Map Activity continued:

Upstream:

Look at the Becka Brook on the map and follow its path upstream to its source:

1. Where does the stream start?

The Becka Brook has several sources - these are the grid references of 5 -SX743765 SX744761 SX738768

2. Do other streams join it? How many?

At least 9

3. Are there any towns, villages or hamlets along the stream? Write down their names.

Holwell, Greator

4. Are they small or large?

Very small - just farms

Downstream:

Look at the river on the map and follow its path downstream to the sea:

1. How did you know you were following the river downstream and not upstream?

The river gets bigger, the contours get lower, meanders start to appear.

2. Where does the river end up? Name the main river and the nearest town to the mouth of the river.

River Bovey and then River Teign ends up at Teignmouth (and Shaldon on the other river bank)

3. Can you see any *meanders*?

Yes - they start at Bovey Tracy but the best ones are north-east of Heathfield

4. Can you see the *flood plain* in the lower river?

Yes - it starts in Bovey Tracey

5. Can you see the *estuary* where the river joins the sea?

The start of it is east of the A380 in Newton Abbot

6. Are there any towns, villages or hamlets along the stream? Write down their names.

Bovey Tracey, Preston, Newton Abbot, Bishopsteignton, Teignmouth, Shaldon

7. Are they small or large?

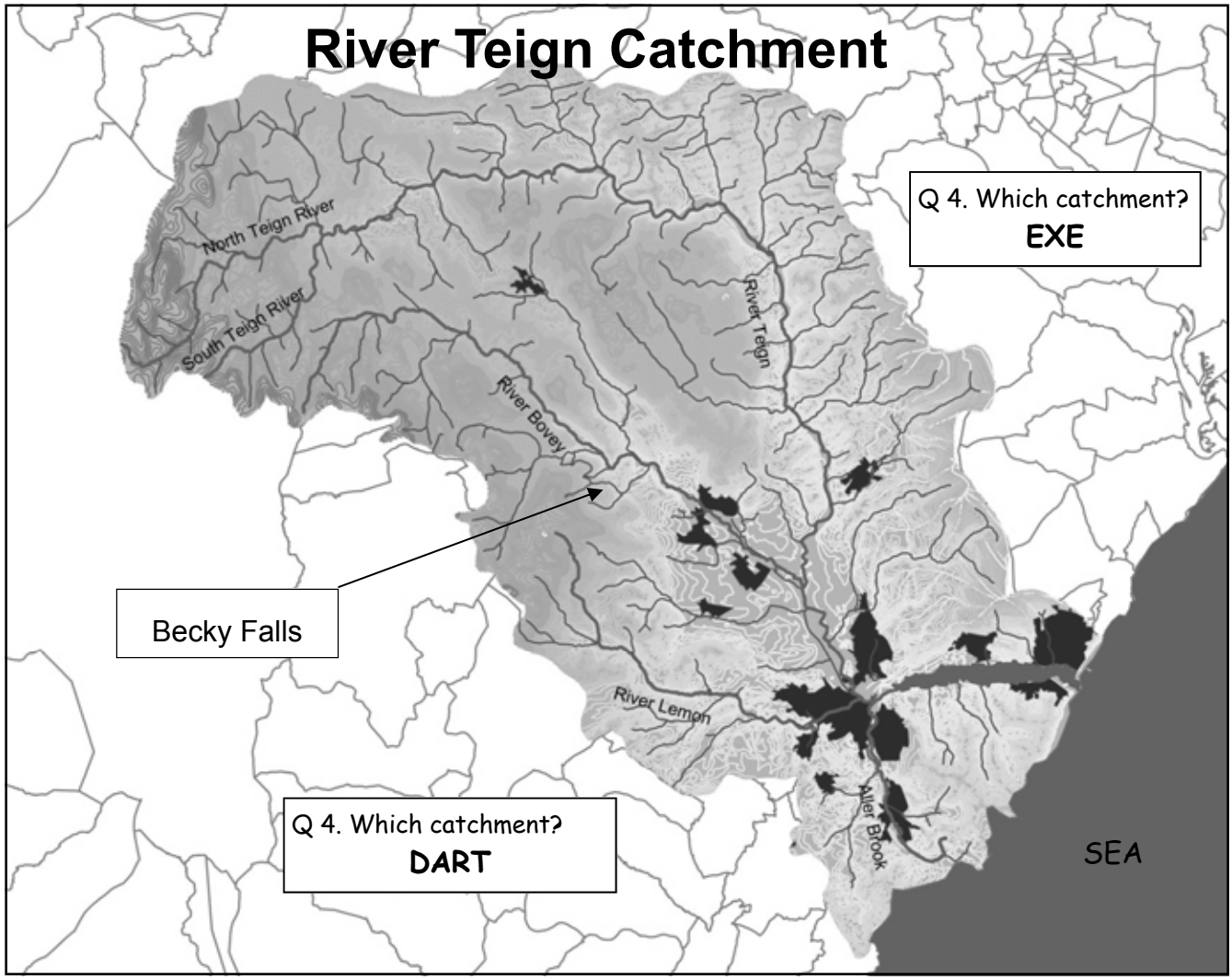
Large

8. Are they different to the ones upstream? In what way?

Yes - they are much bigger.

Map Activity continued:

River Catchment



This is a diagram of the River Teign Catchment area. It shows all the rivers that flow into the River Teign.

1. Name the rivers that feed into the Teign.

Bovey, Lemon, North Teign, South Teign

Using the OS 1:25,000 map find the edges of the catchment.

2. Do all the rivers for this catchment start on high ground?

Yes

3. Are there other rivers flowing from the other side of the hills into another catchment?

Yes

4. Which catchments are adjacent to the Teign Catchment?
(Follow the rivers downstream until they reach the largest river which has an estuary).

Exe, Dart

Map Activity continued:

River Catchment - Land-use:

Many rivers are dealt with on a catchment-wide basis. Let's look at the River Teign and its catchment:

Using the OS 1:25,000 map think about land-use, human activities and how they might affect the river including sources of pollution, extraction of water, changes to the river itself.

1. Can you identify the main land-use in the upper areas of the catchment?

Agriculture and upland farming, tourism.

2. How might this affect the rivers?

Fertilisers and pesticides pollute the river. Water extraction for farms and hotels

3. Can you find any signs of industry in the middle area of the catchment?

Clay mining, industrial estates, tourism, towns (shops)

4. How might these affect the rivers?

Mining uses lots of water, may pollute.
Tourism and towns = people = water consumption.

5. Can you find signs of industry in the lower area of the catchment near the sea?

Shipping, fishing, industrial estates, clay mining, tourism, towns (shops).

6. How might these affect the river?

Water consumption, pollution. May need to dredge the estuary for larger boats.

7. Can you think of anything that will use the whole catchment?

Fish such as salmon

8. How do you think the activities you have outlined above might affect this?

Pollution and sediments harm fish. Over-use of water leads to loss of habitat and concentration of pollutants.