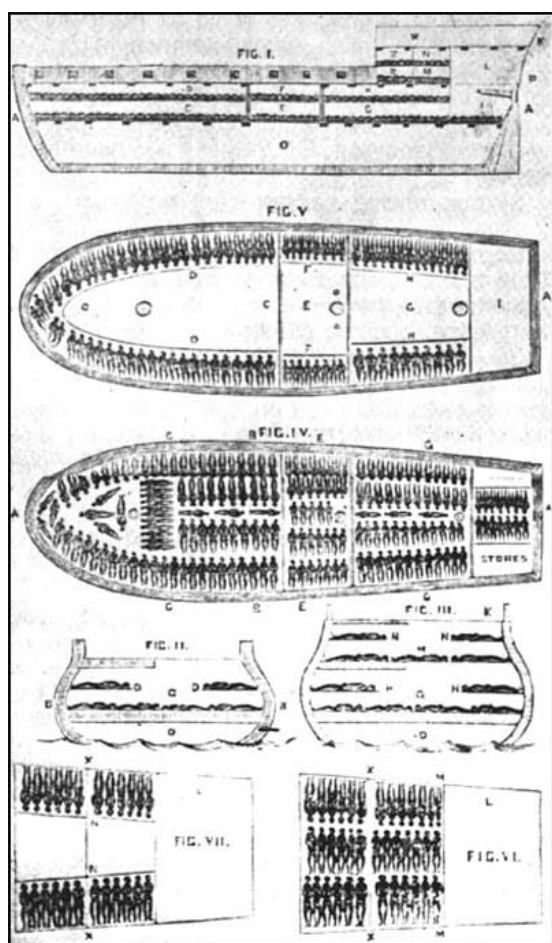# The Slave Ships

Read these background notes.

One of the most disturbing things about the slave trade was the way that slaves were transported on ships. They were chained up between decks in dirty cramped conditions and given very little to eat and drink.

"Chained two by two, right leg and left leg, right hand and left hand, each slave had less room than a man in a coffin", ... "The height between decks was sometimes only eighteen inches (45cm)".

Slaves aboard the ship "Wildfire"

A diagram of the "Brookes" ship showing how to pack the slaves.

Slaves were flogged regularly and forced to eat (some would try and starve themselves to death because life on the ship was so awful) and many would die from diseases such as smallpox or dysentery.

The captain and his sailors considered that the slaves belonged to them and would rape, torture and even murder them without any fear of being punished.

At the end of the six week journey, 12% would be dead, half the survivors would be too ill to work and many were crippled for life because of the damage done by the chains.

An estimated 15 million Africans were transported to the Americas between 1540 and 1850 in this way.

1a Estimating and Volume

1   Estimate how many slaves could lie down on your classroom floor.

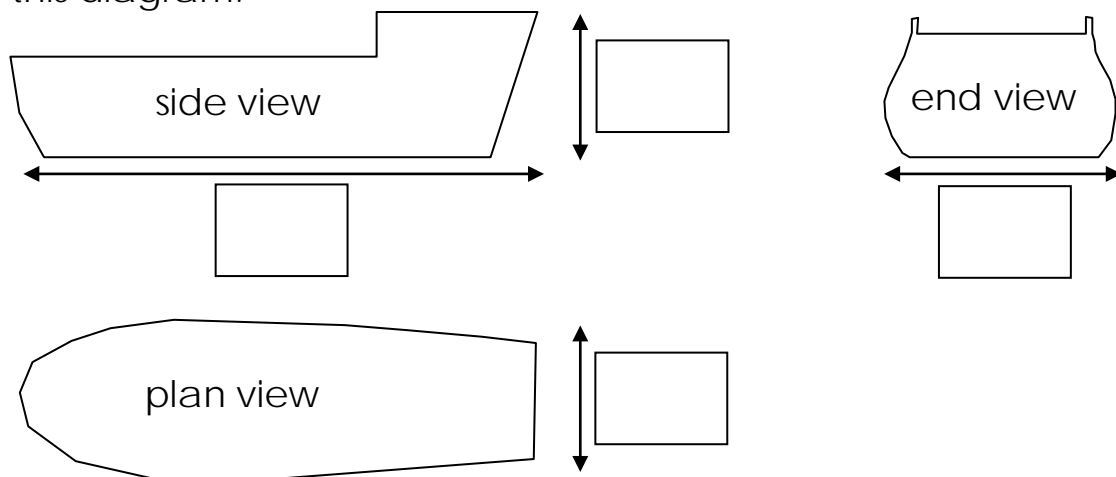(The average height of a slave was 160cm)   _____

_____

Estimate how many "decks" you could fit into your classroom, if they

were only 1m apart. _____

Estimate how many slaves would fit into the classroom using these

extra "decks".   _____

Describe what it would be like for the slaves to be packed in such a

small space.

_____

_____

_____

2   Look at the diagram of the Brookes ship front and back page.

Estimate how many slaves it carried when it was full. _____

Estimate the dimensions of the ship and complete the dimensions on

this diagram:

Estimate how many classrooms would fit into the ship. _____

How many slaves would fit into your classroom if they were packed in

the same way as they were on the ship? _____

3   **Read this eyewitness account of an illegal slave ship in 1829.**

"*The space was so low that they sat between each other's legs and they were stowed so close together that there was no possibility of their lying down or changing their position by night or day.*
The space between decks was divided into two compartments 3 feet 3 inches high; the size of one was 16 feet by 18 and the other 40 by 21; into the first were crammed 226 women and girls, into the second 288 men and boys."

Convert the dimensions of the two compartments to metres.

(1 foot = 30cm)

Compartment 1 Width   _____

            Length   _____

Compartment 2 Width   _____

            Length   _____

If you assume that 3 feet and 3 inches is roughly a metre, what was the volume of these two compartments?

Compartment 1   _____

Compartment 2   _____

4   **Read this**

There are four examples of packing slaves;

The classroom, The Brookes ship, compartment 1, and compartment 2.

To compare the four methods you have to use "**cargo density**".

Cargo density is the number of slaves that would fit into 1m³.

Example: 96 slaves are packed into a 40m³ cabin.

$\div 40$ $\div 40$

        2.4 slaves would fit into a 1m³ cabin.

        The **cargo density** is 2.4 slaves per metre cubed.

5   Compare the four ways of packing slaves in this way.
    (You will need to calculate the volume of your classroom and the
    Brookes ship - *see help sheet*).

    _____

    _____

    _____

    _____

    _____

    _____

    Explain which method was the worst for the slaves.

    _____

    _____

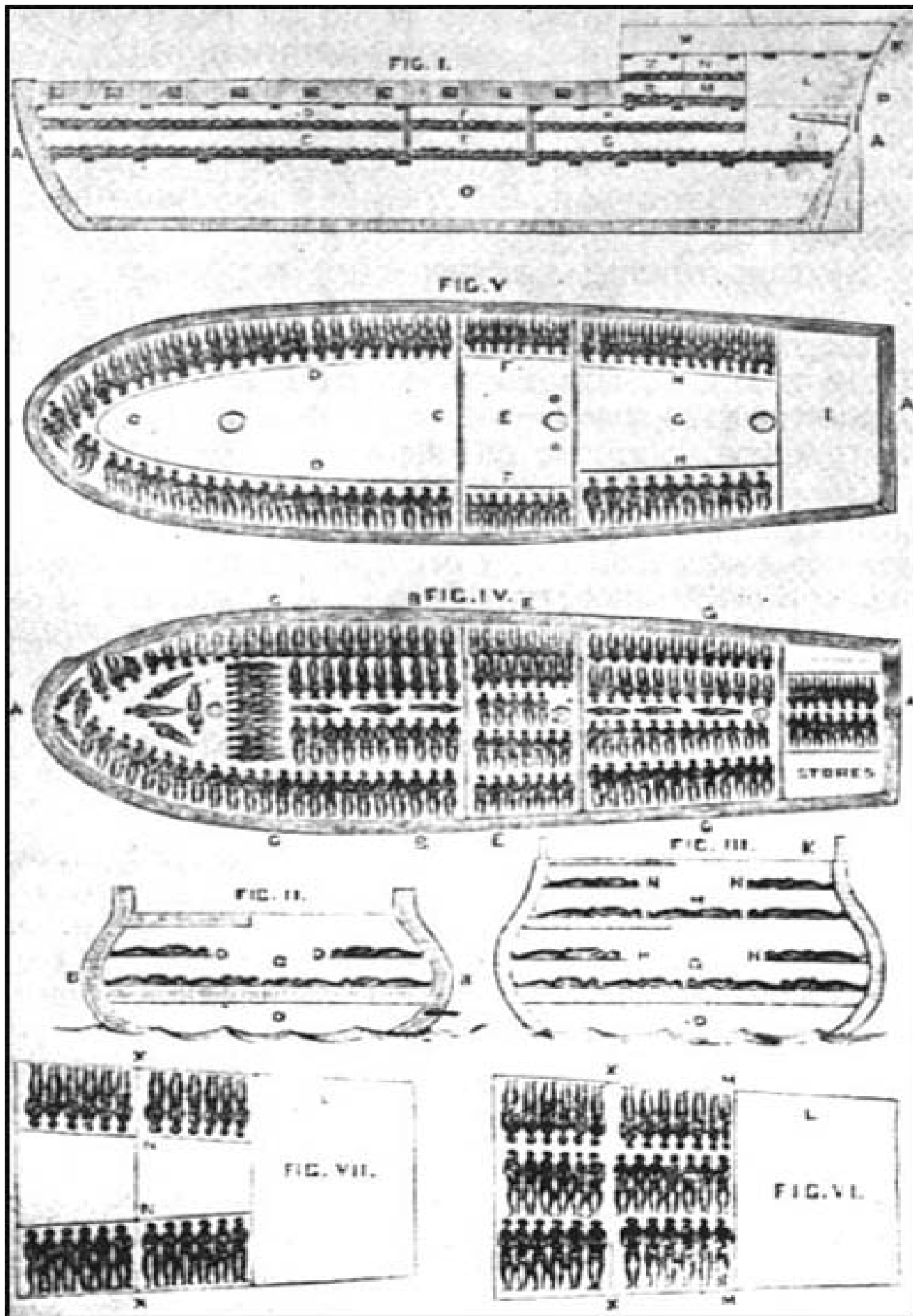6   Imagine that your home is a slave ship.
    One room is for the captain and crew and the rest is for transporting
    slaves. Using the largest cargo density from question 4, estimate how
    many slaves you could transport.

    _____

    _____

    _____

    _____

    _____

    _____

    _____

    _____

    _____

    _____

7   Write down some questions or statements about the slave ships.

_____

_____

_____

8   When the slaves were forced onto the ships, the owners stripped them
      naked, chained them together and branded them with red hot irons.
      What do you think about this?

_____

_____

_____

_____

_____

9   The sailors were often very poor and were sometimes forced to go to
      sea instead of going to prison.
      Explain why you think they did not complain about the slave ship
      conditions and why they didn't tell their families about what went on.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

FIG. I.

FIG. V

FIG. IV.

FIG. II.

FIG. III.

STORES

FIG. VII.

FIG. VI.

A diagram of the "Brookes" ship showing how to pack slaves.

1b The Cost of Shipping

Read this

When slavery first started they looked how much profit they could make if they transported slaves at a rate of 2 slaves per ton.
Tons were a way of measuring the size of a ship.
The Brookes ship was a 90 ton ship so 2 slaves per ton was only 180 slaves.
Here is the balance sheet for a similar ship of 100 tons.

1   Your task will be to complete the bill on the next page.

	£	s.	d.	£	s.	d.
Ship of 100 tons first cost building at £7	(a)					
Expence of Outfit including all her Furniture	700					
Extra Do fitting for the African Trade	350					
Amount of Cargo for 200 Negroes, including						
Insurance on the Ship and Cargo at £17.17.	(b)					
Insurance on the Ship from the West Indies						
Valued at £1500 – at 2½ per Ct.	37	17	6	5357	17	6
Deduct for the common average of Mortality						
5 per Ct. makes 190 each Av'g £34 Stg.				6460		
Agents Commissions at 10 per Ct. on £6460	(c)					
Captain's Do. . . . 6 per Ct. on Do.	(d)					
Mates privelege 1 Slave on the Neat proceeds	30	12				
Surgeons Do.	30	12				
Surgeons head Money 1s. per head on each						
Slave sold	9	10				
Ship's Disbursements in the West Indies	100					
Wages for 20 Men, Officers and Seamen included						
at 50/per Month for 12 Mo's is	(e)					
Interest on the Amo't of Cargo and Outfit						
for 12 Mo's	267	18		2086	12	
add Total Amo't of Ships Cargo and Outfit				5357	17	6
				7444	9	6
Gross Sales of 190 Negroes at £34	(f)					
Value of the Ship on her Return 1/3d. less	1166	14				
	7624	14				
	7444	9	6			
Neat Profit on the Voyage				181	4	6

1 a)

	£	s.	d.
Ship of 100 tons first cost building at £7	(a)		
Expence of Outfit including all her Furniture	700		

The cost of building the ship: £7 per ton

_____

b)

Amount of Cargo for 200 Negroes, including
Insurance on the Ship and Cargo at £17.17,   (b)

The cost per slave.

Calculate the cost of buying and insuring a slave in old money.

_____

Calculate the total cost of the slaves.

_____

Calculate the missing figures for 1b, c, d, e, and f

c)

Agents Commissions at 10 per Ct. on £6460   (c)

The company agent got 10% of £6460 (the selling price) for arranging the deal.

_____

d)

Captain's Do. . . . 6 per Ct. on Do.   (d)

The captain got 6% of £6460 (the selling price) (Do means the same

_____

e)

Wages for 20 Men, Officers and Seamen included
at 50/per Month for 12 Mo's is   (e)

This £50 per month for the whole crew for 12 months.

_____

f)

Gross Sales of 190 Negroes at £34   (e)

This is the selling price of each slave and it assumes that only 5% will die on the journey.

_____

The profit made on 2 slaves per ton was too low so the traders raised it to 5 slaves per ton.

2   a) If the number of slaves was increased to 5 slaves per ton, how many slaves would be carried on this ship?

_____

b) At a mortality (death) rate of 5%, how many of these slaves would be likely to die on the voyage?

_____

3   Buying more slaves cost more but they were sold for more money.

a) Calculate the money received by selling these slaves.

_____

Calculate the costs:

b) Buying, feeding and insurance   _____

c) Agent's commission at 10% of sales   _____

d) Captain's commission of 6% of sales _____

e) Surgeon's pay of 1s per slave sold   _____

f) **Total costs**   _____

4   The ship cost about £4000 for one voyage.
What was the profit made by the shipping company?

_____

_____

5   What do you think of making this kind of profit by selling slaves?

_____

_____

_____

2 Buying and Selling Slaves

Read these background notes

The slavery of Africans in America lasted for about 200 years from about 1620 to 1865. They were bought and sold just like any other goods and they belonged to their owners. Some of the first African slaves were exchanged for 120 pounds of tobacco each in Jamestown, Virginia in 1619. Prices rose quickly; in 1709 a healthy slave would cost £20 in America, in 1780 £50, in 1800 £100 and up to £400 in 1860.
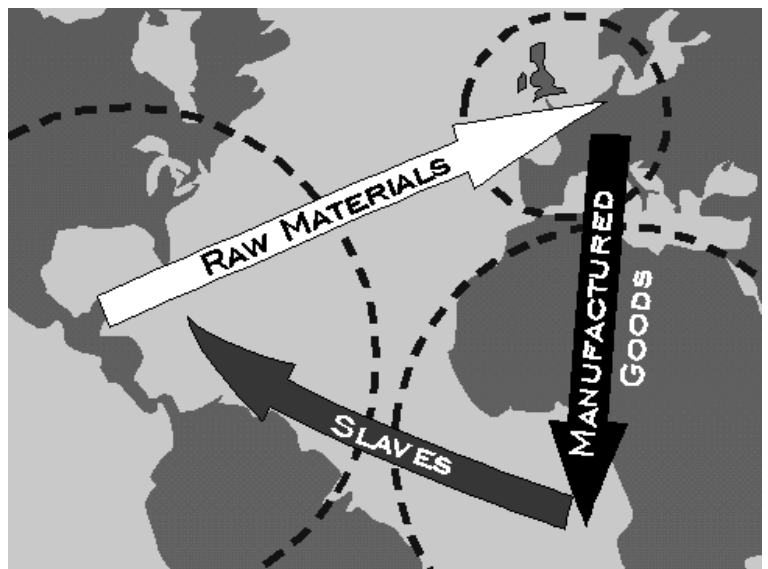
TO BE SOLD, on board the Ship Bance: Yland, on tuesday the 6th of May next, at Ashley-Ferry ; a choice cargo of about 250 fine healthy NEGROES, just arrived from the Windward & Rice Coast. —The utmost care has already been taken, and shall be continued, to keep them free from the least danger of being infected with the SMALL-POX, no boat having been on board, and all other communication with people from Charles-Town prevented.
Austin, Laurens, & Appleby.

In 1780 a male slave cost the same as a barrel of brandy or 5 rolls of tobacco or 12 guns or 15 pounds of gunpowder.

The slaves were part of a trading system called the Triangular Trade. Copper, cloth, glass, guns and ammunition were shipped from Europe to Africa. Slaves were then taken from Africa to America and the West Indies and then cotton, sugar, rum, tobacco, rice and coffee were then taken back to Europe.

During the slave trade, in Africa, traders used cowry shells instead of money. For example, in 1720, 3000 shells were worth about £1. Their advantage was that they could be used anywhere in Africa and even in some countries in Asia and that they could be used to buy very cheap goods.

RAW MATERIALS

MANUFACTURED GOODS

SLAVES

Contact www.themathszone.co.uk

2a Cargo Investigation   Work in groups of 3

Here are three accounts of goods traded for slaves in Dicky's Cove in 1700.
(Dicky's Cove is near Ancobra beach in Ghana)

April 18:
Traded 2 half barrels of gunpowder for:
Men 0 Women 1
Boys 0 Girls 0

June 30:
Traded 6 carbines (guns),
1 firkin of tallow (wax),
28 sheets, 2 brass pans and 8 tankards for
Men 2 Women 1
Boys 0 Girls 0

May 6:
Traded 48 dozen large knives,
39 sheets and 8 half cases of spirits for:
Men 3 Women 0
Boys 0 Girls 0

*A firkin is a small barrel
with a volume of 72 pints.

Captain Snelgrave was a slave ship captain in the 18th century.

He traded gunpowder, carbines, knives, cotton sheets, rum, brass pans,

tankards, wax and slaves.

Imagine that he was ordered to buy 600 slaves in Africa (250 women and

350 men) and transport them to Jamaica to a sugar plantation.

Work out how many of each sort of goods he had to load so that he had

enough to exchange for the slaves.

Complete the list and show all the transactions in detail. You must make

the cargo as varied as possible as the African traders wanted a variety of

goods.

(You also need to read "Buying and Selling Slaves")

Transactions and Cargo

1 _____
_____
_____
_____

2 _____
_____
_____
_____

3 _____
_____
_____
_____

4 _____
_____
_____
_____

5 _____
_____
_____
_____

6 _____
_____
_____
_____

7 _____
_____
_____
_____

Goods	Quantity
Gunpowder (half barrels)	_____
Carbines	_____
Cases of Rum	_____
Barrels of brandy	_____
Rolls of tobacco	_____
Brass pans	_____
Knives	_____
Tankards	_____
Cotton sheets	_____
Firkins of tallow	_____

(Copy onto A3)

2b Profiting from Slavery

1   £1 in 1860 would be worth £60 in today's prices.

     How much was a slave worth in 1860 in today's prices?

     _____

2   An English buyer could obtain a healthy slave for £14 pounds worth of
     goods in 1760. The same slave sold in Virginia for £45 pounds in 1760.
     What was the percentage profit?

     _____

     What was the profit on a cargo of 500 slaves in 1760?

     _____

Read these background notes

By the 1700s, New England (a part of America) distilleries were producing millions
of gallons of cheap rum to supply traders with rum that could be exchanged for
slaves. Once the slave ships arrived in Africa, merchants could buy adults for
about 120 gallons of rum or children for about 80 gallons. Rum cost as little to
produce as five and a half old pennies per gallon; in 1746, a slave could be
auctioned in the West Indies for £30 - 80. (There are 240 old pennies in a pound.)

3   Calculate how much it would cost to produce enough rum to
     exchange for an adult slave (in our modern money).

     _____
     _____

4   If a slave was sold at auction for £50, what would be the percentage
     profit?

     _____
     _____
     _____

5   If a slave was sold for £80, what would be the percentage profit?

_____

_____

_____

Read this

Here is a table of slave prices for sale in the West Indies:

The first column shows the purchase price in Africa and the second column

shows their selling price on the plantations in the West Indies

(The dates are approximate)

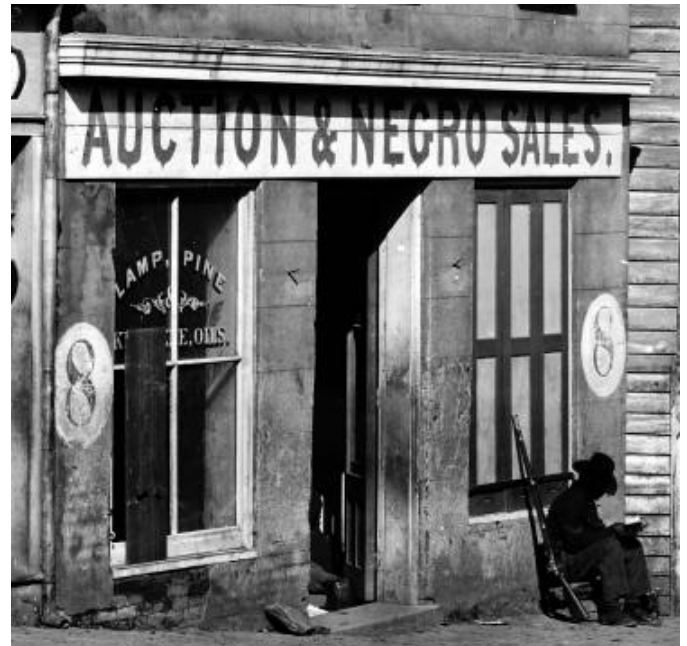|	AFRICAN PRICE	PLANTATION PRICE (stg)	
1676	£3	Barbados	£15
		Leewards	£16
		Jamaica	£17
	£3	Jamaica (R.A.C.)	£13
		Other islands	£13-16
1700	£8-12		£23-41
	£10-14	Jamaica (£50 curr.)	£36
	e.g., 420 lbs. cowries at		
	£3½ cwt.		
	6-11 oz. gold at		
	30-s		
1750	£12-15		£28-35
	£8-22	(av.) £35-46	
	(Senegambia–Sierra Leone		
	15-18		
	Windward Coast and		
	Bight of Benin £14-16		
	Gold Coast £18-22		
	Bonny, Calabar £12-18		
	Cameroons-Angola £8-10		
1800	£27		£50
	£25 (Bonny)		£50

Use the help card to learn about using cowries

The range of prices reflects that some slaves were more valuable than

others.

6   Calculate the percentage profit for the slaves bought in 1676 and
     sold in:

     a) Barbados   _____

     b) Leewards   _____

     c) Jamaica   _____

7   Calculate the maximum percentage profit that was possible in 1750.
     (Think of the best buying price and the best selling price.)
     Explain your method

     _____

     _____

     _____

8   Describe what happened to slave prices in Africa from 1676 to 1800

     _____

     _____

     (This happened because traders had to travel further inland to

     capture slaves)

9   The slave prices table shows that slaves were bought using cowry
     shells. A slave cost 420 lbs of cowries and cowries were worth £3.50
     per hundredweight (cwt). A hundredweight is 112 pounds
     What was the price of this slave?

     _____

     _____

10   Imagine that slaves were easy to buy - what would happen to their
     price at auction?

     _____

     _____

3a Slavery in America (1808-1865)

Read these background notes.

The slave trade was abolished in Britain in 1807 and America followed in 1808. However, slavery was not abolished throughout America until 1865. This photograph of the slave market was taken in Atlanta, Georgia in 1864 and if you look at the census of 1850 and 1860 on the next page you can see that the number of slaves in some states actually increased during this time. From 1808 until 1865, slaves were imported illegally and the conditions on these slave ships were even worse than before.

In the time before abolition, slaves would escape to the "Free States" of America (where slavery was already abolished), Canada, Mexico or overseas. This network of secret routes to freedom was called "The Underground Railroad".

At its height between 1810 and 1850, one report estimated that up to 100,000 slaves escaped using the Underground Railroad.

The Underground Railroad has become a symbol of freedom especially for African Americans.

The Underground Railroad

Use this census extract to answer the questions.
You will also need the sheet "Working on the plantation"

THE CENSUS OF 1860.

STATES.	CENSUS OF 1850.			CENSUS OF 1860		
	Free.	Slave.	Total.	Free.	Slave.	Total.
Alabama*	428,779	342,844	771,623	529,164	435,132	964,296
Arkansas......	162,797	47,100	209,897	324,323	111,104	435,427
California	92,597	....	92,597	380,015	....	380,015
Connecticut ...	370,792	....	370,792	460,151	....	460,151
Delaware......	89,242	2,290	91,532	110,420	1,798	112,218
Florida*.......	48,135	39,310	87,445	78,686	61,753	140,439
Georgia*	524,503	381,682	906,185	595,097	462,230	1,057,327
Illinois	851,470	....	851,470	1,711,753	....	1,711,753
Indiana	988,416	....	988,416	1,350,479	....	1,350,479
Iowa	192,214	....	192,214	674,948	....	674,948
Kansas........	....	....	....	107,110	....	107,110
Kentucky	771,424	210,981	982,405	930,223	225,490	1,155,713
Louisiana*.....	272,953	244,809	517,762	376,913	332,520	709,433
Maine	583,169	....	583,169	628,276	....	628,276
Maryland	492,666	90,368	583,034	599,846	87,188	687,034
Massachusetts..	994,514	....	994,514	1,231,065	....	1,231,065
Mississippi*....	296,648	309,878	606,526	354,699	436,696	791,395
Missouri.......	594,622	87,422	682,044	1,058,352	114,965	1,173,317
Michigan	397,654	....·	397,654	749,112	....	749,112
Minnesota	6,077	....	6,077	162,022	....	162,022
New Hampshire	317,976	....	317,976	326,072	....	326,072
New Jersey....	489,319	236	489,555	672,031	....	672,031
New York	3,097,394	....	3,097,394	3,887,542	....	3,887,542
North Carolina.	580,491	288,548	869,039	661,586	331,081	992,667
Ohio	1,980,329	..·..	1,980,329	2,339,599	....	2,339,599
Oregon........	13,294	....	13,294	52,464	....	52,464
Pennsylvania ..	2,311,786	....	2,311,783	2,906,370	....	2,906,370
Rhode Island ..	147,545	....	147,545	174,621	....	174,621
South Carolina*	283,523	384,984	668,507	301,271	402,541	703,812
Tennessee	763,258	239,459	1,002,717	834,063	275,784	1,109,847
Texas*	154,431	58,161	212,592	420,651	180,388	601,039
Vermont	314,120	....	314,120	315,116	....	315,116
Virginia.......	949,133	472,528	1,421,661	1,105,196	490,887	1,596,083
Wisconsin	305,391	....	305,391	775,873	....	775,873
POP. OF STATES	19,866,662	3,200,600	23,067,26	27,185,109	3,949,557	31,134,666

1   The "free states" were states where slavery had already been

abolished. List the" free states".

_____

_____

_____

_____

2   Use the map to describe where the "Free States" were in America.

_____

_____

3   How many slaves were there in the USA in 1860?

_____

_____

    What was this as a percentage of the population?

_____

_____

    Which state had the highest percentage of slaves?

    (Estimate which states had the highest percentages and then
    calculate the exact percentages.)

_____

_____

_____

_____

_____

4   What percentage of slaves escaped using the Underground
    Railroad?

_____

_____

5   Why do you think this percentage was so small?

_____

_____

Working on the Plantation

Read this

Life on the plantations was extremely hard. On the sugar plantations at the beginning of the 18th century, the work was so hard and their food and health was so poor that slaves would only live for an average of 7 years after being bought. Slaves were "necessary" because there weren't enough people to work the land.

Slaves were cheap at the start of the 18th century so it made economic sense to work them as hard as possible because it was cheaper to buy a new one than look after them properly.

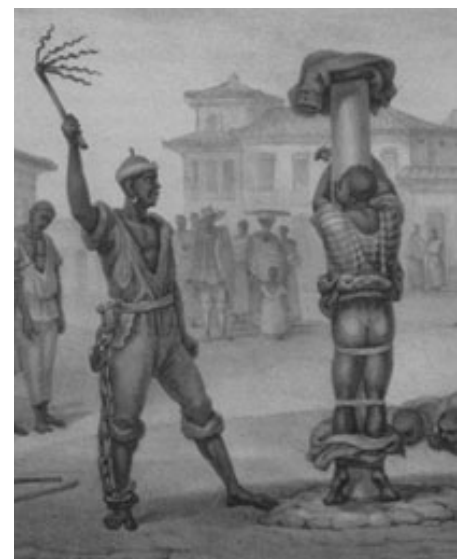To make sure the slaves did not try to escape, the punishments were severe. One slave had her ears chopped off, was whipped every Saturday morning for a year and had to work in chains for two years because she tried to escape. These pictures show slaves being whipped in public, being hung from a tree and whipped, having their leg tied to their necks and even having had their leg amputated as a punishment for escaping.

Follow up task:

Imagine that you are campaigning to ban slavery in America in 1860. Using the answers to the earlier questions and the information on the sheet "Working on the Plantation", write a report to the President of the United States asking him to abolish slavery in all the states of America. (Continue on another piece of paper if necessary.)

_____

_____

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3 African Civilisation

Read these background notes

Before Africans suffered the effects of slavery and being ruled by Britain and other European countries they had their own languages, cultures, governments, science and mathematics.
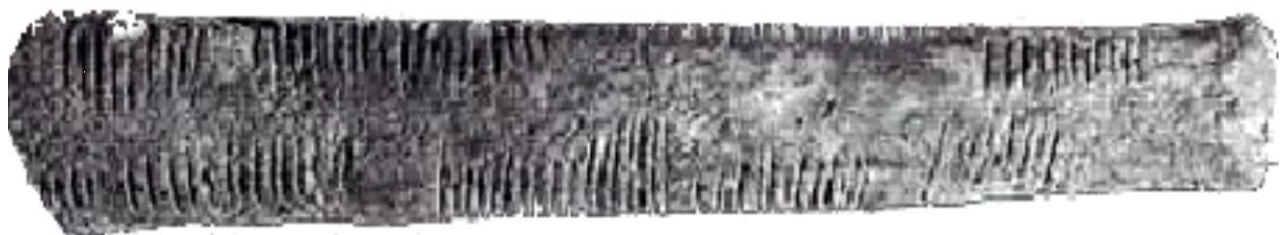
The slave traders lied that the Africans were just savages who couldn't count to more than three. This made selling slaves seem more acceptable. As recently as 1904, an African named Ota Benga was exhibited in the Bronx zoo in New York alongside an orang-utan.

Africa is where humankind began. It is in Africa that farm animals were tamed. The herdsmen were the first to domesticate cows and the guinea fowl was probably the first farmyard chicken.

By the time of the slave traders, many African kingdoms had sophisticated economies. For example, in Benin there was a tax system that made sure that no-one starved.

It is in Africa that two of the oldest examples of a written number system have been found. The oldest is 3500 years old

This is the Ishango Bone; it was discovered on the border of the Democratic Republic of Congo and Uganda by the Belgian geologist Jean de Heinzelin. It is not just a tally stick but is probably a calendar that records the phases of the moon.

The following lesson is going to be a study of mathematics that existed in Africa before slavery and will look on counting systems, puzzles and games.

3a Maths in Africa

Read this

The following table gives some of the number words in Igbo, a Nigerian language.

Assume that the rest of the Igbo numbers follow the same pattern.

1 otu	6 isii	11 iri na otu	40 ohu abuo
2 abuo	7 asaa	12 iri na abuo	50 ohu abuo na iri
3 ato	8 asato	20 ohu	100 ohu iso
4 ano	9 toolu	21 ohu na otu	300 ohu iri na ohu iso
5 iso	10 iri	30 ohu na iri	400 nnu

1   Write the following numbers in Igbo

16   _____   26   _____

39   _____   75   _____

128   _____

500   _____

600   _____

856   _____

2   What are these numbers?

iri na ano   _____

ohu na asato   _____

ohu abuo na iri na ano   _____

ohu ano   _____

ohu anon na iri na toolu   _____

3   Describe how the Igbo counting system works on another sheet of paper.

Read this

The Yoruba system of counting is far more complex since it involves adding and subtracting tens and units. It is also based on twenties.
Look at this table carefully and fill in the gaps with names and numbers.
You will need to discuss the names of the numbers with a partner.

1 Okan		16 Erin din logun	
2 Eji		17	
3 Eta		18	
4 Erin		19 Okan din logun	
5 Arun		20 Ogun	
6 Efa		21 Okan le logun	1 + 20
7 Eje		23 Meta le logun	
8 Ejo		25 Megogbon	30 - 5
9 Esan		27 Meta din dogbon	30 - 3
10 Ewa		30 Ogbon	
11 Okan laa	10 + 1	40 Ogoji	20 x 2
12		60	
13		80	
14		100	20 x 5
15 Edogun	(20 - 5)	200 Igba	

The Yoruba never add more than 4 units onto a number

The way they say 67 would be:

Meta din ewa din ogrin   3 from 10 from 80

1   Write these following numbers, following the rules of Yoruba:

        a) 63 _____

        b) 68 _____

        c) 72 _____

2   Write these numbers in standard notation:

        a) Meta din ogorun   _____

        b) Erin din laa din ogorun   _____

        c) Erin le ogota   _____

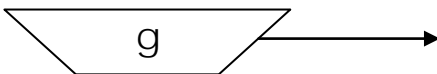Notice that **eta** (3) sometimes becomes **meta.**

3b A Traditional Riddle   Work in pairs

Read this

This logic puzzle appears in many Africa languages with various animals and vegetables.

- A Ghanaian wants to take a leopard, a goat and a sack of cassava leaves across a river in a boat.

- The Ghanaian can only take one thing at a time.

- The leopard cannot be left alone with the goat and the goat cannot be left alone with the cassava leaves. How can the Ghanaian do it?
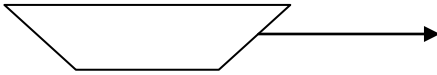
Use a series of labelled diagrams to show your journeys and where the cargo is left. What is the smallest number of journeys possible?

Journey	Left bank	Boat	Right bank
1	l, c	g →	
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

Read this

A second version of the riddle allows the boatman to take two items across at a time.
Use the table to solve the second riddle

Journey	Left bank	Boat	Right bank
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

How do you know that you have solved these puzzles in the lowest number of moves possible?
Explain how you know and how you can tell if a lower number of moves is possible.

_____
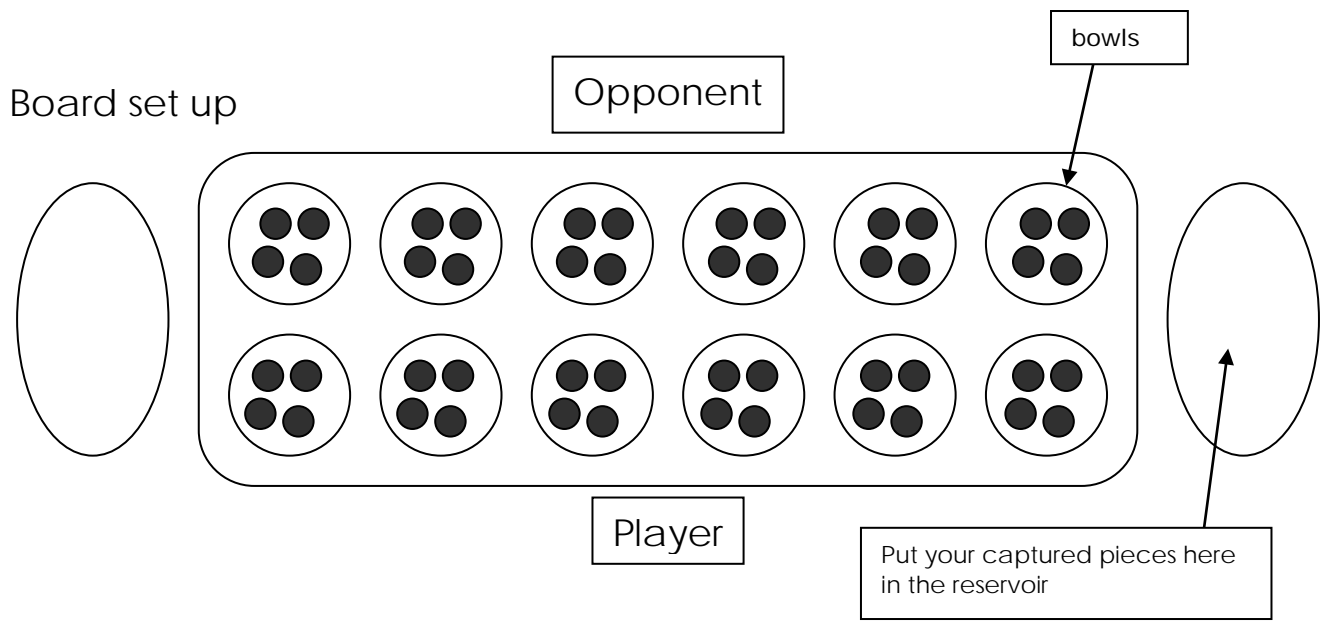
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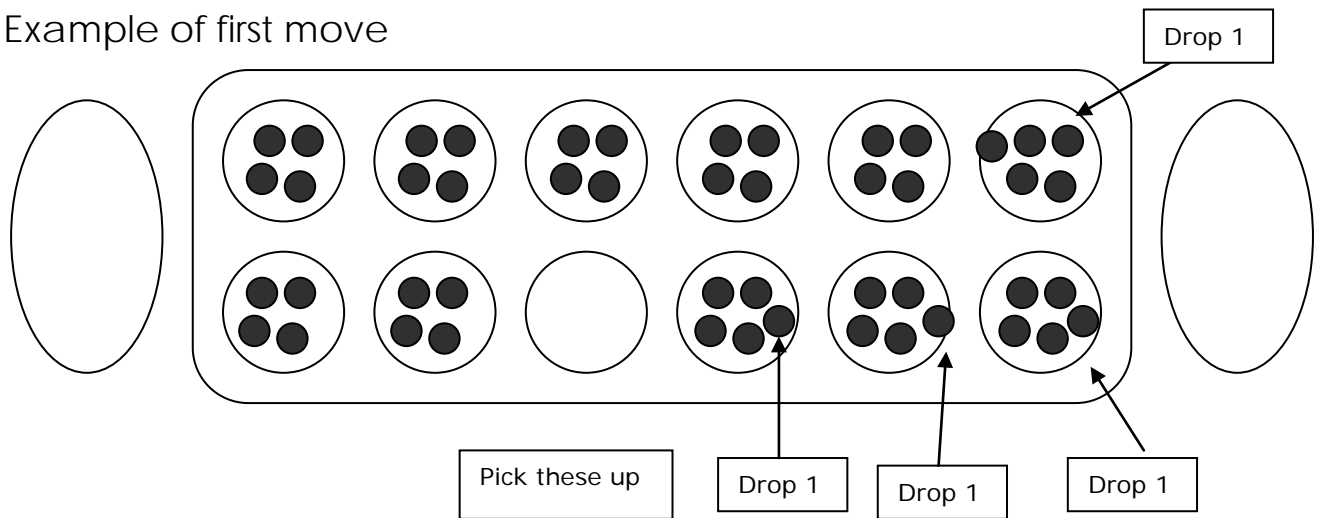_____

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3c Wari

A game for 2 players

Read this

This game is played throughout Africa, but each tribe or country has its own version which has slightly different rules. In Tanzania it is called *soro or bao*, the Arabic game is called *mancala*, the Igbo people call their games *azigo* or *okwe* and the Ashante have *wari* or *aware*.

You will need a Wari board and 48 counters.

- Place 4 counters in each of the "bowls"

- Decide who goes first

- When it is your turn you pick up all the counters from one of the bowls on your side and drop them one at a time in each bowl as you move anti-clockwise.

- If your last counter drops into one of your opponent's bowls and makes a total of 2 or 3 counters you capture his counters.

- If the bowl to the right of this bowl on your opponent' side also has 2 or 3 counters in it you also capture these counters and so on.

- You are not allowed to capture pieces on your side of the board.

- You are not allowed to capture a bowl of counters if it means that it leaves your opponent with no counters to play. You must leave one bowl of counters alone even if you would normally capture it.

- The game ends when one side of the board is empty or when both players agree to finish. When this happens you capture all the counters on your side and put them in your reservoir.

- The player with the most counters in their reservoir wins.

Board set up

Opponent

bowls

Player

Put your captured pieces here in the reservoir

Example of first move

Drop 1

Pick these up

Drop 1

Drop 1

Drop 1

Example of capture

Pick these up

Drop 1

Capture these 2

Drop 1

Drop 1

Drop 1

Drop 1

Drop 1

Contact www.themathszone.co.uk