

CHAPTER 25

Homemade tools and teaching materials

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# Homemade tools and teaching materials



## Low-cost equipment

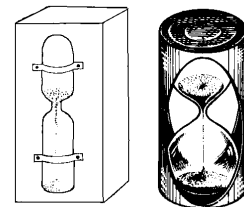
This section describes a few tools you can make to help with your work as a midwife.

## Homemade timers

If you do not have a watch or clock, you can make a simple timer to measure the number of heartbeats or breaths in a minute. None of these timers are as accurate as a clock, but they work fairly well. (When you first make the timer, you will need to use a clock to measure the length of a minute.)

### Sand timers

A sand timer consists of a tube of glass closed at both ends, with a narrow neck in the middle. It is partly filled with fine sand. The sand runs from the upper to the lower half in an exact period of time.

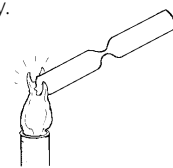
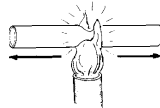
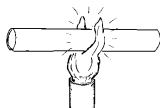


Egg timers, or 3-minute sand timers, can be purchased at low cost in some areas. To use one, count the number of heartbeats or breaths for 3 minutes, and then divide by 3 to know the number of heartbeats or breaths a minute. You can also use this timer to tell when contractions are 3 minutes apart.

### 1-minute sand timer

To make a 1-minute sand timer, follow these steps:

1. Heat the middle of a glass tube over a Bunsen burner or other small, very hot flame.
2. Stretch the tube to make a thin neck in the middle.
3. Seal one end of the tube by melting it slowly.



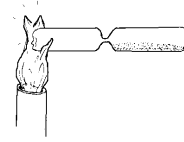
4. Wash some fine sand to remove the dirt. Dry it in the sun, and sift it through a very fine strainer. Then heat the sand to remove moisture.



5. Put just enough sand in the tube so that it takes exactly 1 minute for all of it to run from one part to the other. Use someone's watch with a second hand to check this.



6. Seal the other end of the tube.



An easier method is to use a "soft glass" test tube, or a blood collection tube. Make a thin neck in the middle of the tube using a hot flame. You do not need to melt the open end — simply seal it with a cork or rubber stopper. This timer may be less accurate in a moist climate.

Do not be surprised if you have to make a sand timer several times before you get it right. If the sand sticks, find a smoother, finer sand, and be sure it is absolutely dry. Be sure you have the right amount of sand before you seal the tube. Protect the timer by keeping it in a box padded with cotton or cloth. It can break very easily at the neck.

### Water timers

Water timers are easy to make but less accurate than sand timers.

Use a glass or plastic tube. The longer and thinner the tube, the more accurate it will be as a timer.

To form a narrow hole in a glass tube, hold it over a hot flame, then stretch, cool, and break it.

Hold the tube upright and fill it with water exactly to the top.

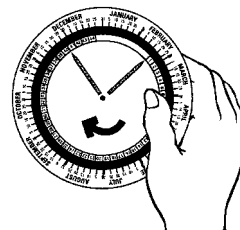
Using a watch with a second hand, measure how far the water level drops in exactly one minute. Check this a few times, and then mark the spot with ink, nail polish, or a piece of tape.



**Note:** Sometimes a water or sand timer will get partly clogged and give a false reading. So it is a good idea to check your timer against a clock or watch from time to time.

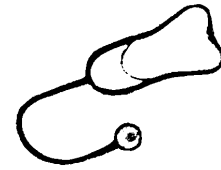
### Homemade due date calculator

See page 531 for a tool you can make that shows a woman's likely due date if you know the date of her last monthly bleeding.



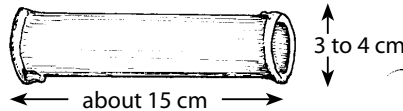
## Homemade stethoscopes

A stethoscope is a hollow tube that makes it easier to listen for sounds inside a person's chest or belly. It is a good tool for listening to the baby's heartbeat inside the womb.

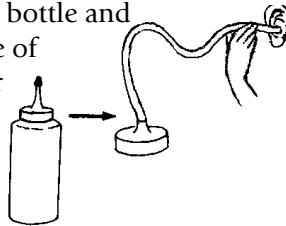


The best stethoscopes are made of metal and plastic, and can be expensive. But there are several homemade stethoscopes you can make:

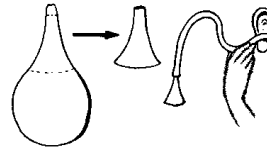
- Use a hollow tube of bamboo, wood, or clay.



- Use the top of a narrow-necked plastic bottle and a piece of rubber tube.



- Cut off the top of a rubber suction bulb, and use it with a piece of rubber tube.



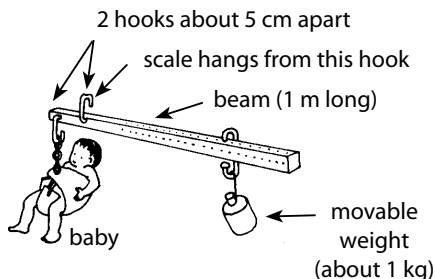
## Homemade scales

A store-bought scale is more accurate and easier to use than these scales, but these are cheap and easy to make.

### 4 kinds of scales

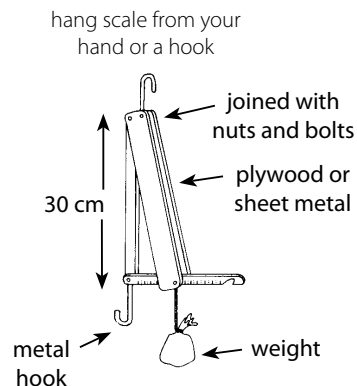
#### Beam scale

This is the easiest kind to make and probably the most accurate. The beam can be made of dry wood or bamboo. The movable weight can be a bag, bottle, or tin can filled with sand.



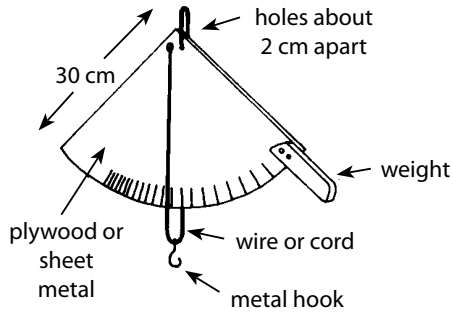
#### Folding scale

This scale is easy to carry from place to place. It works best if made of metal or plywood strips.



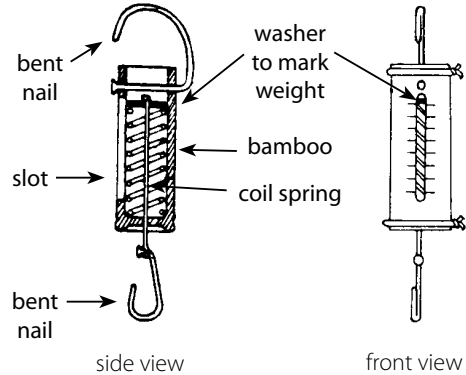
### Quarter-circle scale

If this scale is made with plywood, use sheet metal to reinforce the upper corner. The weight should be between 1 and 2 kilograms. It can be made from scrap metal or a piece of heavy pipe.



### Spring scale

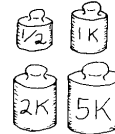
This scale is made with a coil spring inside a bamboo tube. The spring should be about 30 centimeters long and squeeze to half its length with a weight of 15 kilograms.



### How to make the scales accurate

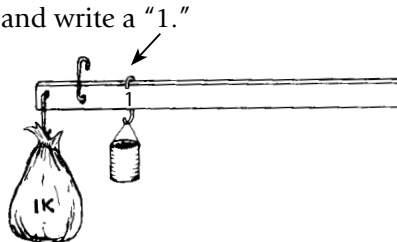
To mark the scale accurately, you will need some standard weights. Perhaps you can:

- borrow some weights from a merchant at the market.
- use a merchant's scales to make your own weights by filling bags with sand.
- use 1-kilogram packages or cans of food.



### To mark your scale

1. Hang a 1-kilogram weight on it.
2. Balance the movable weight.
3. Mark the spot with a small line and write a "1."
4. Now add 1 more kilogram at a time, rebalancing the weight and making a mark each time, until you have 6 or 7 marks on the scale.

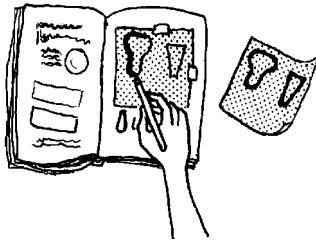


## Teaching materials

This section tells how to make some materials for teaching about women's bodies, pregnancy, and birth. These materials can be used when teaching other midwives, pregnant women and their families, or people in the community who want to learn about women's reproductive health. Most people learn more easily using these types of teaching materials than they would learning only from a book.

### 3 basic methods for making teaching materials

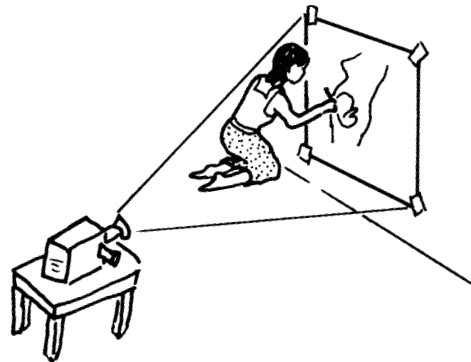
#### Copying a pattern



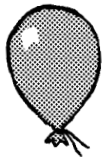
Some of these teaching materials include patterns for making models. To copy a pattern, put a thin sheet of paper over it. If possible, tape it down lightly so it does not move around. Then trace the pattern onto the thin paper. Remove the thin paper and pin or tape it on the cloth or cardboard you are going to cut out.

#### Making a slide into a poster

Put a large piece of paper or a large cloth on a wall. Then put a slide into a slide projector and shine the picture onto the piece of paper or cloth. Trace the picture exactly. Once you have the outline, color it in.

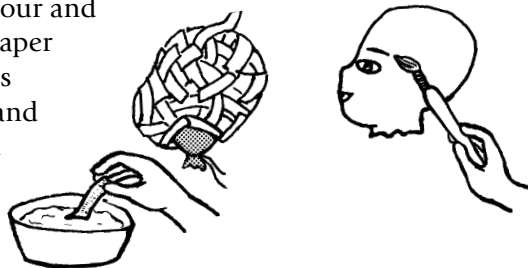


#### Making models out of papier maché



Papier maché is a good material for making models of parts of the body. For example, if you want to make a model of a baby's head, use a balloon or some dry, crumpled newspaper in a plastic bag.

Then make a paste of flour and water. Dip strips of newspaper or other paper in it, and layer the strips over the balloon. Make several layers and let it dry. It dries well in the sun. Paint the outside so it looks like a baby's head.

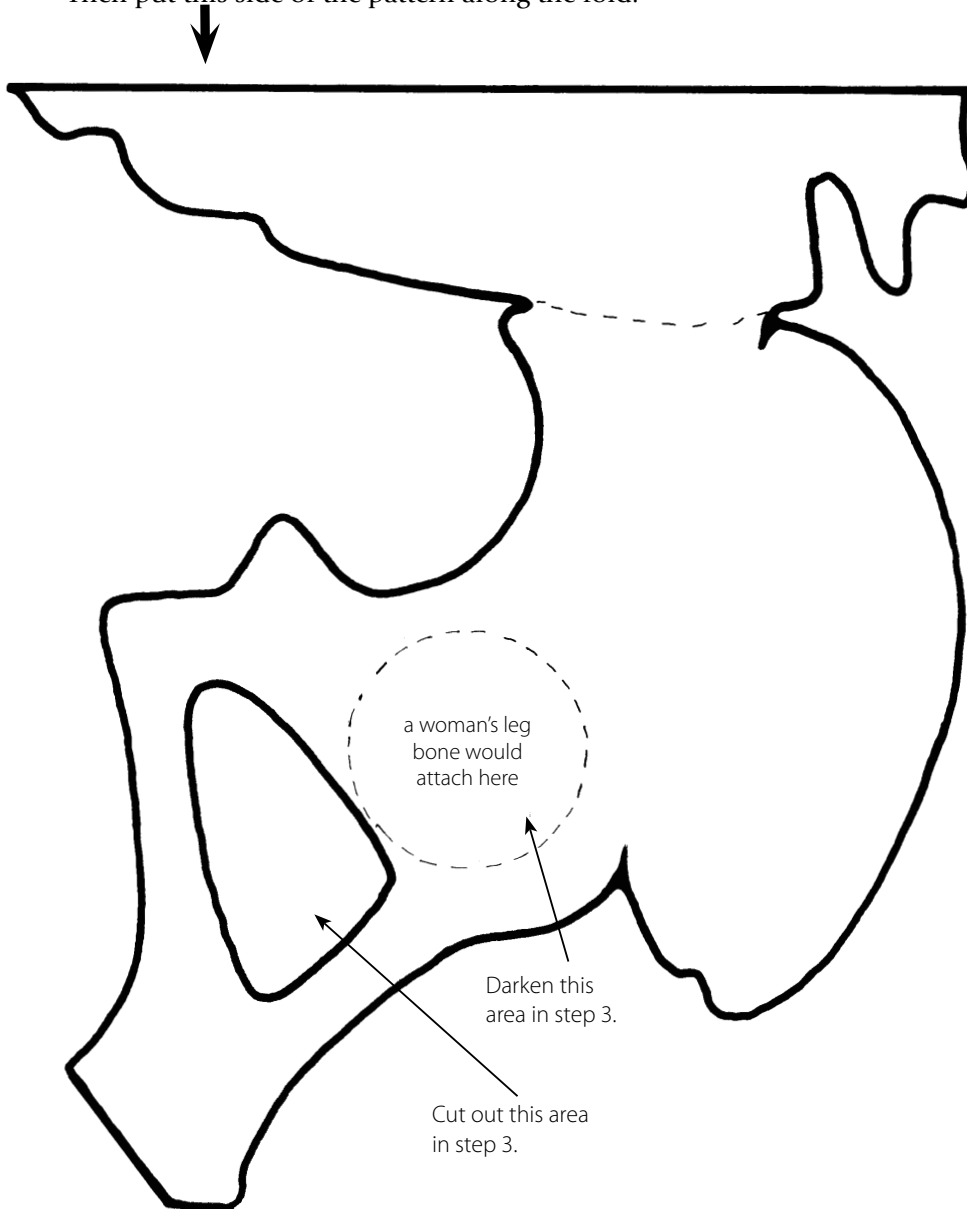
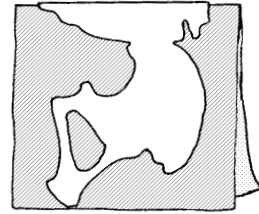


## Models of a pelvis, womb, and vagina

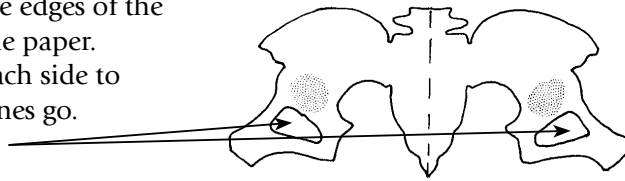
### A paper pelvis

You can make a simple model of the pelvis using a piece of stiff paper or thin cardboard.

1. First, make a pattern by tracing the shape below on thin paper.
2. Fold the piece of stiff paper in half.  
Then put this side of the pattern along the fold.

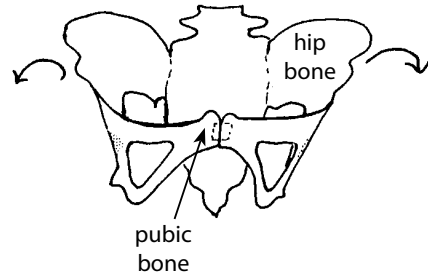


3. Cut the paper along the edges of the pattern, then unfold the paper. Draw a dark spot on each side to show where the leg bones go. Cut out the holes here.



back view

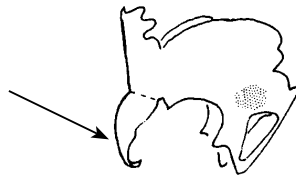
4. Bend the paper around and join the ends together to make a pubic bone in front. Be sure to keep the dark spots on the outside. To keep the front of the pelvis round, put a thin strip of cardboard across the inside of the pubic bone. Gently curl the hip bones (at the top on each side) back.



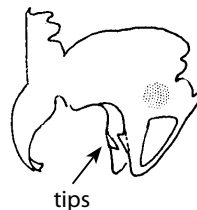
5. Bend the tailbone back.



6. Then curl it forward.



7. Fold the little tips so that they point inward.



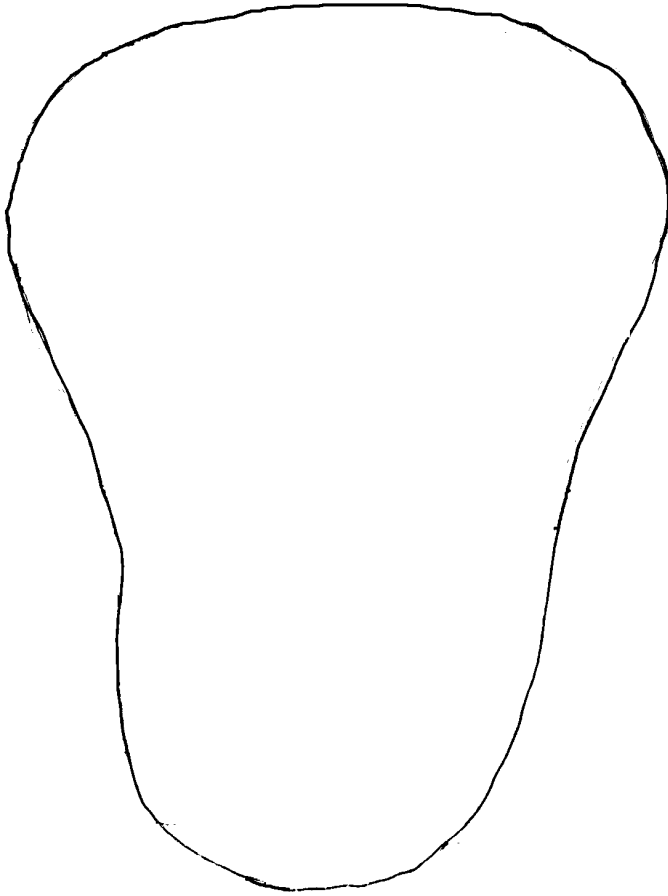
You can use this pelvis with a doll (see page 463) to show how a baby passes through a woman's pelvis to be born.



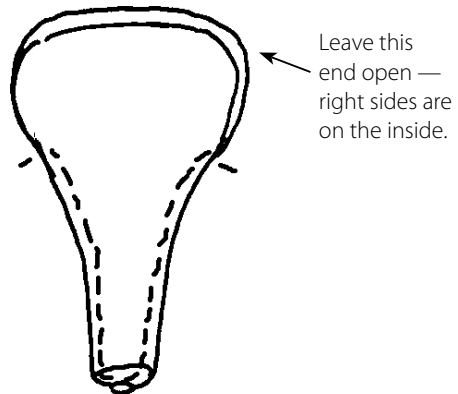
## A womb and vagina made from cloth

### *The womb*

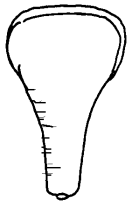
1. To make a non-pregnant womb, cut 2 pieces of cloth this size.  
Stretchy material is best. (If you do not have stretchy material, cut the material a little larger than this picture.)



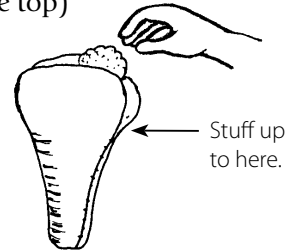
2. Put the womb pieces together and sew along the dotted line. Leave the top end open.



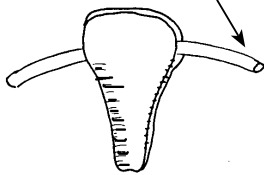
3. Turn the womb inside out.



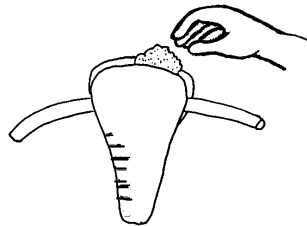
4. Stuff the inside of the womb (almost to the top) with soft material.



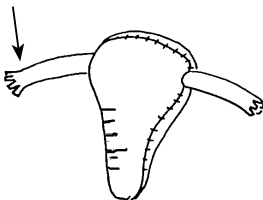
5. Put a plastic straw or tube of cloth out each side of the top of the womb, like this:



6. Stuff more soft material in the top.



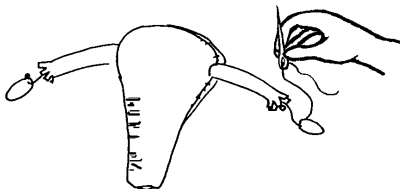
7. Sew the top closed, and make a fringe on the ends of the tubes, like this:



8. Make 2 small cloth balls this shape to show the ovaries, where the mother's eggs are made. Stuff them with soft material.

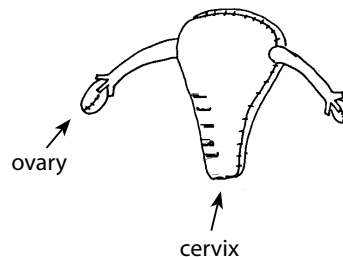


9. If you are using a plastic straw to show the tubes, sew a strong string to one ovary.



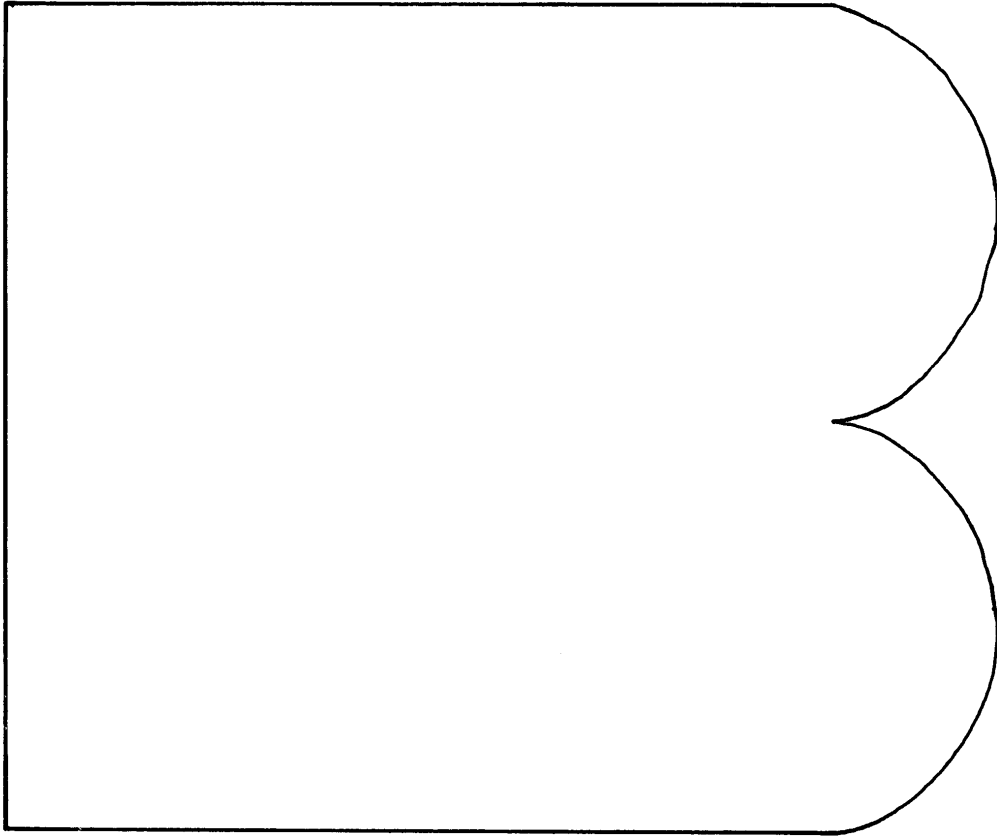
Put the string through the straw and attach it to the other ovary. If you are using cloth tubes, sew one ovary to each end.

10. The finished womb should look like this:

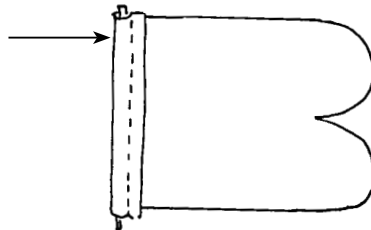


***The vagina***

1. Cut a piece of material this size and shape:

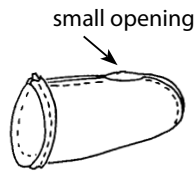


2. Sew a little soft wire or plastic along the flat edge of the material.

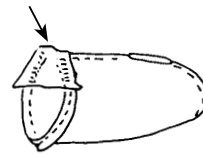


3. Fold the material together to make a tube.

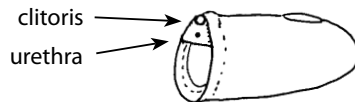
Sew, leaving a small opening just big enough to fit the cervix of the womb into.



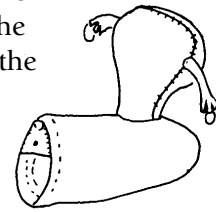
4. Sew a piece of cloth here.



5. Turn the tube so the right sides face out. Make a knot here to show the clitoris. Make a dot or a hole to show the urethra (opening that urine comes out of).



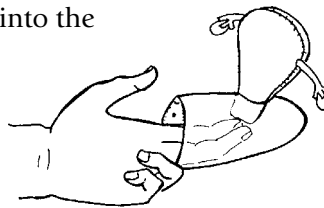
6. Attach the womb to the vagina by putting the bottom of the womb into the opening in the vagina.



### Using the model

Here are a few ways you can use this model in teaching:

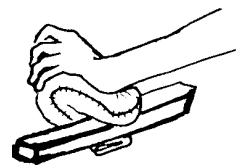
1. Students can put their fingers into the vagina and feel the cervix.



2. You can hold the womb in front of your belly so people understand where the womb is in the body.



3. You can show how to stop a hemorrhage after birth. Fold the womb over a board or stick to show how to press the womb against the pubic bone.



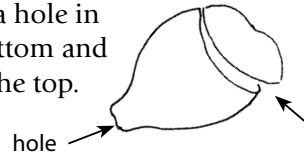
## A model of pregnancy: the womb, placenta, cord, and baby

### A womb made from a gourd

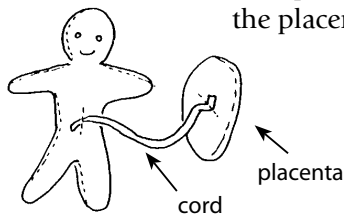
1. Look for a gourd shaped like this:



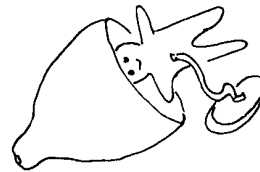
2. Make a hole in the bottom and open the top.



3. Make a simple doll from cloth. Make the doll small enough to fit inside the gourd. Use a small piece of rope or string for the cord, and a small pillow for the placenta.

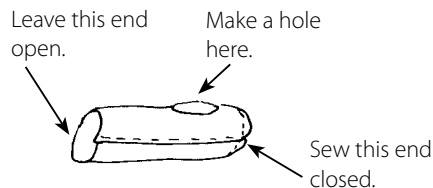


4. Put the doll inside the gourd. You can glue the placenta to the inside wall of the gourd.

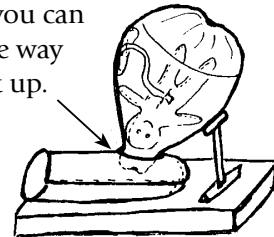


(For another way to make a doll, see page 463.)

5. Make a vagina out of a tube of leather, cardboard, rubber, or some other material. Make a hole in the top. Leave one end open and sew the other end closed.



6. Put the bottom of the womb into the hole in the top of the vagina. Perhaps you can find some way to prop it up.

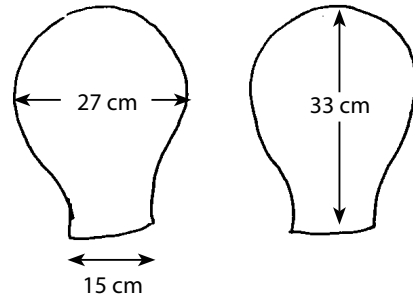


7. If you want to show an open cervix, make another gourd womb with an open bottom, like this:

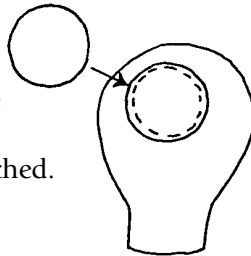


## A womb made from cloth

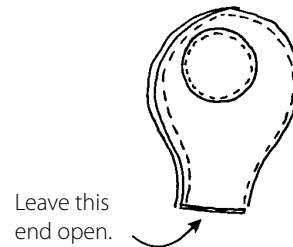
1. Cut 2 pieces of material this shape.  
The material should be about 33 centimeters (13 inches) long. It should be about 27 centimeters (10½ inches) wide at the top and about 15 centimeters (6 inches) wide at the bottom. Stretchy material is best.



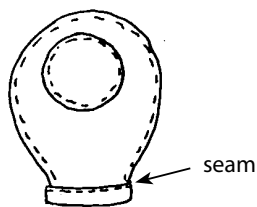
2. Cut a circle of red cloth the same size as the placenta (see page 460). Sew it to one of the womb pieces. This circle shows the spot where the placenta is attached.



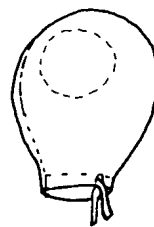
3. Put the sides of the womb together and sew like this:



4. Turn up the open end and sew a seam. Leave enough space for a drawstring to fit inside. This will be the cervix.

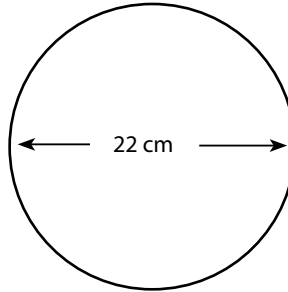


5. Turn the womb right side out. Put a drawstring or a piece of elastic through the seam at the bottom.

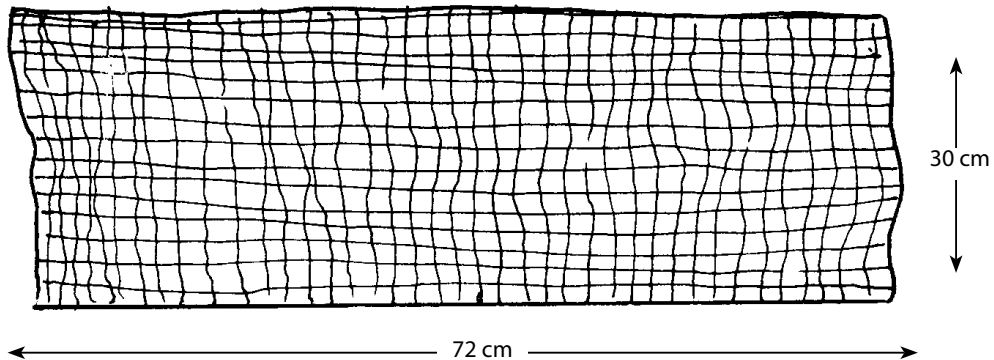


## The placenta

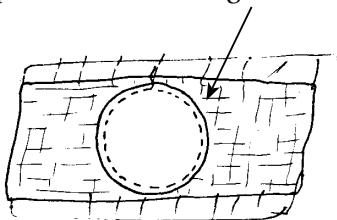
1. To make the placenta, cut 2 pieces of cloth in a big circle. The circles should be at least 22 centimeters (8 inches) across. They do not have to be exactly round.



2. To make the membranes (the bag of waters), use thin material you can see through. Cut the material about 30 centimeters (12 inches) wide and about 72 centimeters (28 inches) long.



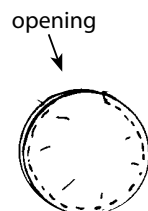
3. Lay one of the circles face down on the middle of the thin cloth. Sew the circle down, leaving a space around the edge.



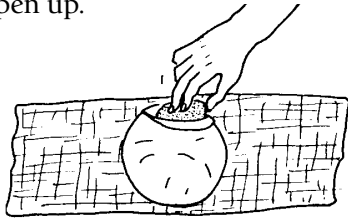
4. Turn the thin cloth over. Fold the thin cloth carefully away from the edge of the circle and pin it down so it is entirely contained in the circle. Leave the edge of the circle sticking out.



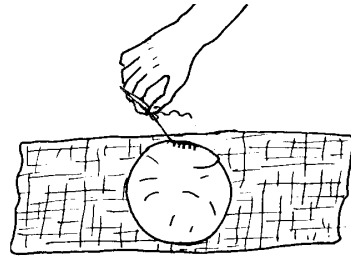
5. Put the other circle face down over the first circle and folded thin cloth. Sew almost all the way around, leaving a small opening.



6. Turn the circles inside out. Take out the pin, and the membranes will open up.



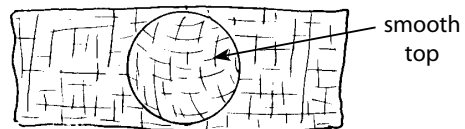
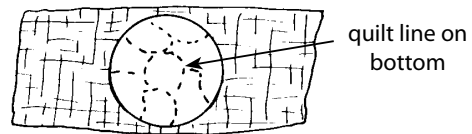
7. Sew the opening closed.



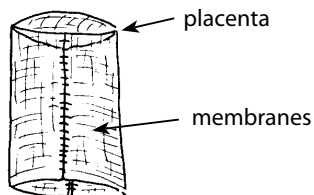
Stuff the placenta with some soft material like foam rubber, old rags, or dried grass.

8. Turn the placenta to the side that has no thin cloth over it. This is the bottom of the placenta — the side that is attached to the womb wall.

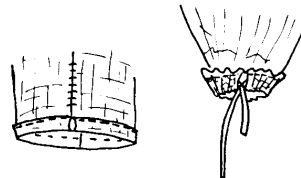
If you like, quilt the bottom to show the segments in the placenta. Do not let the quilting go through to the top side of the placenta. The top should be smooth.



9. Let the thin material hang down, and sew the sides together to make a tube.



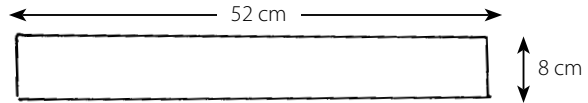
10. Turn up the bottom of the tube and sew it, leaving a space that a drawstring can fit through. Thread a drawstring through the bottom of the tube.



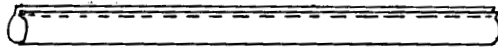


## The cord

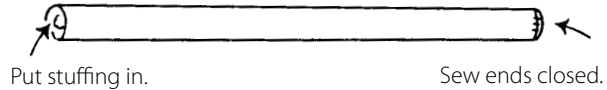
1. Cut a long piece of cloth about 52 centimeters (20 inches) long and 8 centimeters (3 inches) wide.



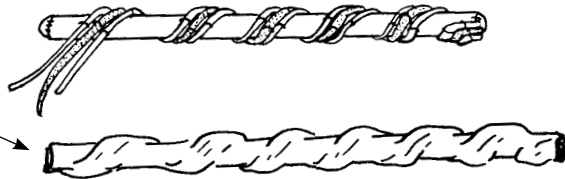
2. Fold the material together, lengthwise, and sew along the edge.



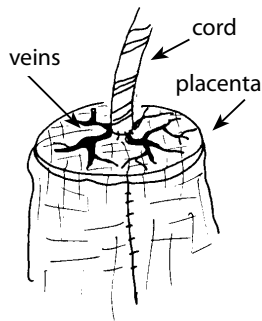
3. Turn the material inside out. Stuff it with something soft, just as you stuffed the placenta.



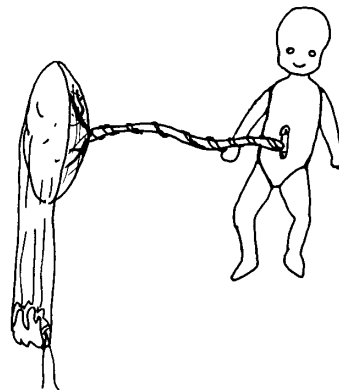
4. To show the arteries and vein in the cord, wind 3 thick strings or pieces of yarn around the cord and sew them down so they do not get tangled. Two of the strings should be the same color. If possible, cover the cord with a piece of thin material like you used for the membranes, so it looks like this:



5. Sew one end of the cord onto the top side of the placenta (the side covered with thin material). Draw veins on this side of the placenta with a felt tip or ink pen.

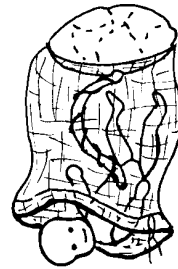


6. Attach the other end of the cord to a doll (see page 463). You can sew the cord to the doll or fasten it with a safety pin.





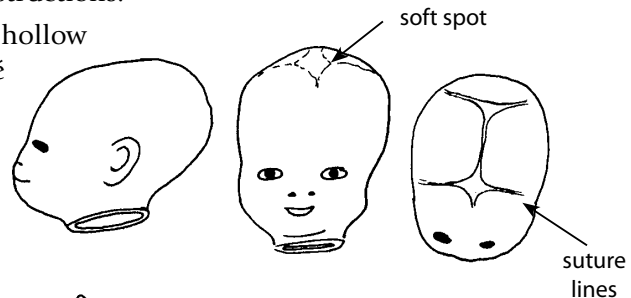
To show the baby inside the bag of waters, put the doll into the bag and close the drawstring. To show the bag breaking, open the drawstring.



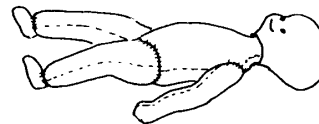
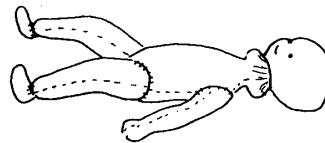
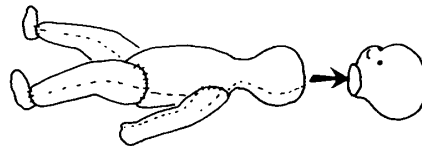
## The baby

Although any doll can be used as a baby, the best kind of doll has a hard head and a soft body. If you are making a doll, follow these instructions:

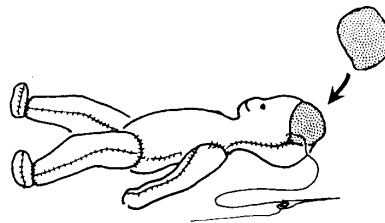
1. Make a hard head with a hollow center from papier maché (see page 451). Paint a face on the head, and then paint on the soft spots or suture lines (see page 259).



2. Sew a life-size body for the doll, with a round head a little smaller than the hard head you just made. Stuff the cloth with foam rubber, rags, or dried grass, so that it looks like a baby's body. Then stuff the cloth head into the hollow center of the hard head.



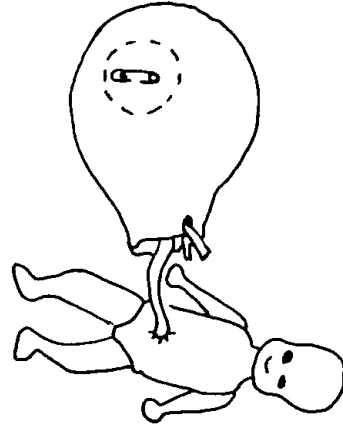
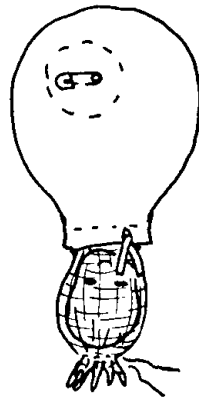
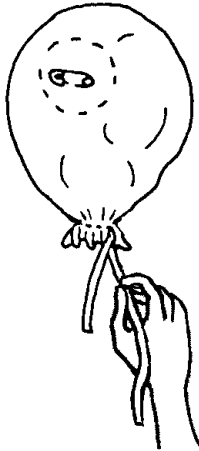
If papier maché is not easy to use, you can try this way of making a hard head. Stuff the body and face with soft material, then stuff the top of the head with one of these: a gourd; a hard ball; a smooth, round piece of wood; or a round stone.



## Using models to teach

To show how the baby, placenta, and membranes fit inside the womb, put the baby inside the membranes with the placenta, then put the membrane bag into the womb. Put the bottom of the placenta up against the red circle inside the womb and pin it with a pin.

1. Pull the drawstring to close the cervix.
2. Then open the drawstring so the baby can be "born." (If you want to show that the waters have broken, open the drawstring on the membranes.)



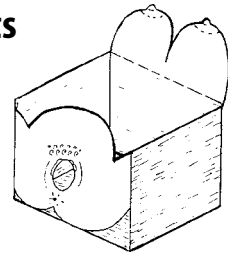
3. Take off the pin and squeeze the placenta out to show the birth of the placenta.
4. Explain that the red circle inside the womb is like an open wound that bleeds. Squeeze the womb to show how it must contract to stop the bleeding.



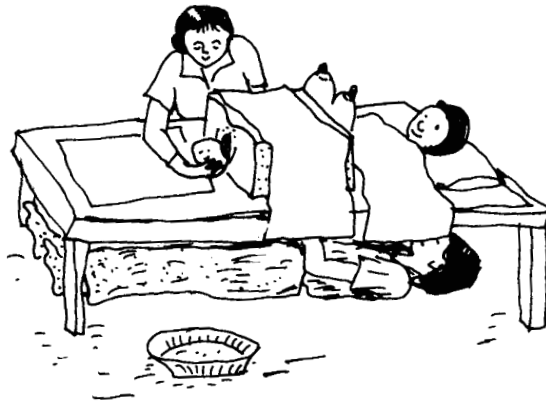
## A model of birth: the birth box and birth pants

### The birth box

To demonstrate birth, cut and paint a cardboard box to look like a woman's body. Make a hole that the doll can fit through. Make a belly out of the front flap of the box and breasts out of the back flap.

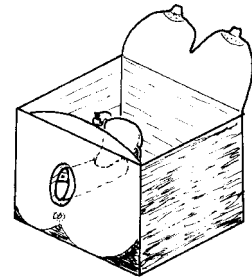


To make the box more real, you can put it on a cot under a cloth or blanket. Put a doll above the box on the cot so it looks like a woman, then have someone lie underneath the cot. This person can push up on the box to show contractions and make panting and moaning sounds as if giving birth.

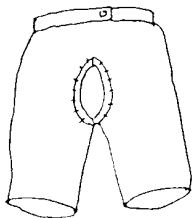


Or you can put the womb and vagina you made in the birth box to give people an idea of how the womb and vagina fit in the body.

Use a balloon or IV bag filled with red-colored water to help people learn to manage heavy bleeding after birth.



### The birth pants



Birth pants give a more real view of birth. Cut a large old pair of pants with a hole for the vaginal opening. Then have a woman wear the birth pants over her clothes and act like a woman in labor. The woman then pushes a doll hidden in her own clothing out through the hole in the birth pants, followed later by the placenta.