



Education

Temperature: How to Measure

Getting an accurate measurement of your child's temperature takes practice. If you have questions about these instructions, ask your health care provider to show you how it's done. Then ask your provider to watch you do it.

Where is the best place to put the thermometer?

A rectal (in the bottom) temperature is the most accurate. Temperatures measured by mouth, by electronic pacifier, or by ear are also accurate if done properly. Temperatures measured in the armpit are the least accurate, but they are better than no measurement. The best place to use the thermometer depends on the age of your child.

- For a baby less than 3 months old (90 days old): An armpit temperature is best because it is safest and works fine for a quick check. If the armpit temperature is over 99°F (or 37.2°C), double check it with a rectal temperature. It is good to double check with a rectal temperature because if your baby has a true fever, you should see a health care provider immediately.
- For a child between 3 months and 4 or 5 years old: A rectal temperature or electronic pacifier thermometer are best. Using an ear thermometer is fine after 6 months old. An armpit temperature is fine for a quick check if done correctly.
- For a child older than 4 or 5 years old: Take the temperature by mouth (orally).

How to Take a Rectal Temperature

1. If you are using a glass thermometer, shake until the mercury line is below 99°F (37.2°C). If you are using a digital thermometer, turn it on.
2. Have your child lie stomach down on your lap.
3. Before you insert the thermometer, put some petroleum jelly on the end of the thermometer and on the opening of the bottom (anus).
4. Insert the thermometer gently into the bottom about 1 inch. If your child is younger than 6 months old, gently insert the thermometer only 1/4 to 1/2 inch. If you put the thermometer in just until the silver tip disappears, that is about 1/2 inch. Never try to force it past any resistance. Forcing could damage the bowel.
5. Hold your child still while the thermometer is in.
6. If you are using a glass thermometer, leave it in your child's bottom for 2 minutes before you take it out. If you are using a digital thermometer, take it out when you hear the correct signal (usually a series of beeps).
7. Read the temperature on the thermometer. If you are using a glass thermometer, you may have to rotate the thermometer until you can see the end of the mercury line.
8. If the rectal temperature is over 100.4°F (38°C), your child has a fever.

How to Take Armpit (Axillary) Temperatures

1. If you are using a glass thermometer, shake it until the mercury line is below 98.6°F (37°C).
 2. Place the tip of the thermometer in a dry armpit.
 3. Close the armpit by holding the elbow against the chest for 4 or 5 minutes. Do not remove it before 4 minutes have passed.
 4. After 4 or 5 minutes take the glass thermometer out and read the temperature by finding where the mercury line ends. You may need to rotate the thermometer until you can see the mercury. If you are using a digital thermometer, remove it after you hear the signal (usually a series of beeps) and read the temperature on the
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screen.

5. Your child has a fever if the armpit temperature is over 99°F (37.2°C). If you're not sure if it is correct, check it by taking a rectal temperature.

How to Take Oral (Mouth) Temperatures

1. Be sure your child has not had a cold or hot drink in the last 30 minutes.
2. If you are using a glass thermometer, shake the thermometer until the mercury line is below 98.6°F (37°C). If you are using a digital thermometer, turn it on.
3. Place the tip of the thermometer under one side of the tongue and toward the back. An accurate temperature depends on putting it in the right place. Ask your health care provider to show you where it should go.
4. Have your child hold the thermometer in place with his lips and fingers (not his teeth). He should breathe through his nose, keeping his mouth closed. If your child can't keep his mouth closed because his nose is blocked, suction out the nose.
5. Leave the glass thermometer in the mouth for 3 minutes. Leave a digital thermometer in the mouth until you hear the correct signal (usually a series of beeps).
6. Read the temperature. If you are using a glass thermometer, you may need to turn the thermometer until you can see where the mercury line ends.
7. Fever is an oral temperature over 99.5°F (37.5°C).

How to Take a Electronic Pacifier Temperature

1. Have your child suck on the pacifier until the temperature stops changing and you hear a beep. This usually takes 3 to 4 minutes.
2. Read the temperature. Your child has a fever if the pacifier temperature is over 100°F (37.8°C).

How to Take an Ear Temperature

1. If your child has been outdoors on a cold day, he needs to be inside for 15 minutes before taking the temperature. (Earwax, ear infections, and ear tubes, however, do not interfere with accurate readings.)
2. Pull the ear backward to straighten the ear canal.
3. Place the end of the thermometer into your child's ear canal and aim the probe toward the eye on the opposite side of the head. Then press the button.
4. In about 2 seconds you can read the temperature.
5. Your child has a fever if the ear temperature is over 100.4°F (38°C).

Types of Thermometers

1. **Glass (with mercury) thermometers** This type of thermometer has been around since 1870. These are the least expensive thermometers. They have some disadvantages. They measure temperatures slowly and are often hard to read. If broken, they cause a mercury spill which can be harmful and difficult to clean up. The American Academy of Pediatrics urges parents not to use mercury thermometers. Glass thermometers come in two forms, oral with a thin tip and rectal with a rounder tip. This difference is not too important. If necessary, a rectal thermometer can be used in the mouth as long as the thermometer is cleaned with rubbing alcohol. An oral thermometer can be used in the rectum if you are extra careful when you put it in.
 2. **Digital electronic thermometers** Digital electronic thermometers measure temperatures with a heat sensor and require a button battery. They measure temperatures quickly, usually in less than 30 seconds. The temperature is displayed in numbers on a small screen. The same thermometer can be used to take both rectal and oral temperatures. A study in Consumer Reports magazine found that digital thermometers were more accurate than glass thermometers. Buy one for your family. They cost about \$10.00.
 3. **Ear thermometers** Many hospitals and medical offices now take your child's temperature using an infrared thermometer that reads the temperature of the eardrum. In general, the eardrum temperature provides a measurement that is as accurate as the rectal temperature. The biggest advantage of this thermometer is that it measures temperatures in less than 2 seconds. It also does not require cooperation by the child and does not cause any discomfort. Ear thermometers for use at home have been developed and they cost \$30 to \$40.
 4. **Digital electronic pacifier thermometers** The new electronic pacifier thermometers have a heat sensor and are powered by a button battery. These pacifiers let you measure oral temperature in younger children.
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They are quite accurate if 0.5°F is added to the digital reading. It takes approximately 3 minutes to get a reading. They cost about \$15.

5. **Temperature strips** Liquid crystal strips put on the forehead have been studied and have been found to be inaccurate. They do not detect an elevated temperature in most children with fever. Touching the forehead is somewhat reliable for detecting fevers over 102°F (38.9°C) but tends to miss mild fevers.

Conversion of Degrees Fahrenheit (F) to Degrees Celsius (C)

Temperatures can be measured in degrees Fahrenheit (F) or degrees Celsius (C). The table below shows the temperatures in degrees Celsius that are equivalent to temperatures measured in degrees Fahrenheit:

95	degrees F	=	35	degrees C
96.8	degrees F	=	36	degrees C
98.6	degrees F	=	37	degrees C
99	degrees F	=	37.2	degrees C
99.5	degrees F	=	37.5	degrees C
99	degrees F	=	37.2	degrees C
100	degrees F	=	37.8	degrees C
100.4	degrees F	=	38	degrees C
101	degrees F	=	38.3	degrees C
102	degrees F	=	38.9	degrees C
103	degrees F	=	39.5	degrees C
104	degrees F	=	40	degrees C
105	degrees F	=	40.6	degrees C
106	degrees F	=	41.1	degrees C
107	degrees F	=	41.7	degrees C
108	degrees F	=	42.2	degrees C

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