



# JUST the FACTS

CUTTING EDGE RESOURCES ON LIFE  
BEFORE BIRTH FOR SECOND-LEVEL  
STUDENTS

# COMPARE YOUR FINGERPRINTS

## A5 CARD

### Compare Your Fingerprints

Discover Just How Unique You Are!

#### Your Everlasting I.D.

No-one has the same fingerprints as you - and your fingerprints never change!

One of the most important and reliable sources of criminal investigation is taking fingerprints, due to two factors - their **persistence** and their **uniqueness**.

Persistence refers to the fact that, after they are shaped in the womb, fingerprints never change over time. Fingerprint ridges start to form just 10 weeks after conception, when the middle layer of skin starts to grow more rapidly than the inner and outer layers. The basal layer buckles and folds, forcing complex shapes. Your movements and surroundings in the womb also affect your unique fingerprint.

#### There are 3 classes of finger prints:



##### The Loop

The most common type. Present in 60-65% of fingerprints.



##### The Whorl

This class of fingerprint is found in 30-35% of fingerprints.

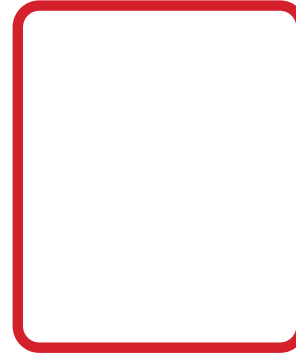


##### The Arch

The least common type. Occurring in only 5% of people.

Info : [crimemuseum.org](http://crimemuseum.org) and [fbi.gov](http://fbi.gov)

Your thumbprint:



Friend's thumbprint:



1. Roll your left thumb on the ink pad. Make sure that from the crease of the first joint to the tip of your thumb is evenly covered in ink, and covered from one edge of the nail to the other.
2. Place your thumb on the box and gently roll from one side of the nail to the other.
3. Lift off your thumb, being careful not to smudge the new ink.
4. Identify which class of fingerprint that your print fits into.
5. Compare with your friend's print.



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MATERIALS  
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SPECIFICALLY FOR  
SECOND LEVEL  
STUDENTS

Want to see  
what you  
looked like  
before  
you were  
born?

....

## Test Your Knowledge!

How much do you  
know about Life  
Before Birth?



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- 1 If you grew as fast during all 9 months as you did in the 2nd month of pregnancy, you would have been born as big as;
  - A. A mini bus.
  - B. Homer Simpson.
  - C. A pair of overweight elephants.
- 2 How early could you have been born and still survived?
  - A. 4 months early.
  - B. 2 months early.
  - C. 8 months after conception.
- 3 When did your fingerprints begin to develop?
  - A. 10 weeks after conception.
  - B. Never, and I have a perfectly valid alibi.
  - C. At birth.
- 4 When did you start growing your first teeth?
  - A. You're still waiting.
  - B. 6 weeks after conception.
  - C. 2 months after you were born.
- 5 When did you first communicate with your mother?
  - A. When you were born.
  - B. 4-5 days after said Mamma.
  - C. When you first said Mamma.
- 6 When you were in the womb, your skin was;
  - A. Smooth as marble.
  - B. A pale green colour.
  - C. As wrinkled as a walnut and as waxy as a candle.
- 7 When did you first get ticklish?
  - A. Never.
  - B. When all your relatives cooed over you.
  - C. 9 weeks after conception.
- 8 When your mother found out she was pregnant, you were;
  - A. Just a bunch of cells the size of a pin head.
  - B. A tiny, perfect human with brainwaves and a heartbeat.
  - C. Already asking could you go out on a Saturday night.

- 9 When you were 5 months old you got a lot of hiccups because;
  - A. You swallowed some amniotic fluid.
  - B. You were moving around a lot.
  - C. Your Mam was at her aqua-aerobics class.
- 10 When were the colour of your eyes determined?
  - A. 6 weeks after you were born.
  - B. They change every so often.
  - C. At the moment of conception.
- 11 You were swimming and doing somersaults;
  - A. 6 weeks after conception.
  - B. You still can't do the doggy paddle.
  - C. When your mother was 7 months pregnant.
- 12 Your brain waves were first recorded;
  - A. 10 days before you were born.
  - B. 43 days after conception.
  - C. You're not sure if they ever had.

# OPEN-OUT EDUCATIONAL A6 LEAFLET



A6 LEAFLET FOLDS  
OUT TO A3 CHART



# CLASSROOM WALL POSTERS

A1 SIZE: 3 VERSIONS



 You are  
**AMAZING!**

Just 21 days after conception  
your **heart** starts beating at an  
incredible 140 beats per minute.  
Your **brain waves** can be  
recorded at 6 weeks!

All about you: You are showing signs of right or left handedness as early as 8 weeks. In fact, at just eight weeks you are fully formed, and at 9 weeks you've begun to suck your thumb. At 10 weeks your fingerprints start to form - and stay with you, unchanged, for the rest of your life.



8 Weeks

After 10 weeks you get increasingly active, and would grasp an object placed in your tiny hand. A few weeks, you can recognise your mother's voice! New research shows that you also donate foetal cells to your mother which her body uses throughout her life to fight disease.

Want to see what you looked like before you were born?



## Hand of Hope

Baby Samuel had been diagnosed with spina bifida at 14 weeks gestation. At just 21 weeks, doctors performed surgery on the tiny baby while still in the womb. Samuel's hand slipped out of the incision in the womb and around the finger of the surgeon performing the operation. The photo, taken by Michael Clancy, became known as the 'hand of hope'.



21 Weeks



## Baby Samuel

A photo tells all...



28 Weeks

## The Rescuing Hug

Twins **Kylie** and **Brielle** Jackson were born at **28** weeks weighing only **900g** each. The smaller twin, **Brielle**, began to fail, and her heart was struggling. Then a nurse decided to place the twins in the same incubator - and **Kylie** placed her tiny arm around her sister. Amazingly, **Brielle** began to improve as she snuggled into her twin, and her heart rate and breathing returned to a healthy rate. Both little girls then continued to thrive.



**JUST**  
the **FACTS**

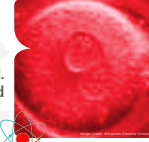
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Photo credit: Anna Family, Michael Clercy, Worcester Telegram & Gazette  
Ref: Sadler T W, Langman's Medical Embryology, Ninth Edition, Lippincott Williams & Wilkins, 2006

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# Your Life BEFORE BIRTH

**Day 1** And you're off! At the moment of fertilisation, 23 chromosomes from each of your parents combine to make you: a unique individual human being, never to be replicated. Almost everything about you is coded in your DNA. You just need to grow and develop for the next 9 months.



**3**  
Weeks

At just **21 days**, your heart begins to beat, and starts dividing into chambers, developing a regular rhythm. At **3 weeks**, all 3 primary sections of your brain are already identifiable.



**6 Weeks** You've already begun to make movements, and your facial features are beginning to form. Your fingers start to separate too, and at **6 weeks** your brainwaves can be recorded.



By just **8 weeks**, you are perfectly formed, with 90% of all your adult structures present. You'll be showing signs of right or left handedness as early as **8 weeks**, and at **9 weeks** you begin to suck your thumb. At **10 weeks** your fingerprints start to form - and stay with you, unchanged, for the rest of your life.



You're now about 8 cm long from head to rump and at **12 weeks** you are moving a lot, kicking and stretching. Your fingers will begin to open and close and your toes will curl. If your mother pokes her tummy you will squirm in response, though she won't feel it yet. Your taste buds have developed and soon you'll be producing a smile!



At 14 weeks you're about 11cm long and weigh about 100g. Very soon, your mother will feel your movements.



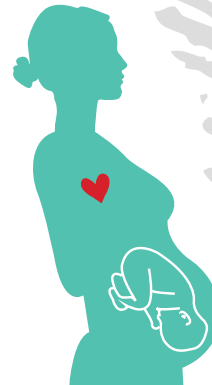
Over the next 11 weeks, you will double or even almost triple your weight. Babies born as early as **5 months (21 weeks)** have survived.



As your brain and nerve endings continue to develop, you may experiment with your sense of touch like this baby in the photo touching her ear. At **21 weeks** you are now producing many of the same hormones found in adults - such as cortisol in response to pain.



You have arrived!



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Photo credit: Br. X, Getty Images, iStockphoto, Life Issues Institute, Lunar Caustic, Oxford Scientific, SciencePhoto Library, Wikipedia Creative Commons  
Ref: Sadler T.W., Langman's Medical Embryology, Ninth Edition, Lippincott Williams & Wilkins, 2004

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# CLASS WORKBOOK A4 BOOKLET

JUST  
the FACTS

Your  
Life  
Before  
Birth

From the moment of conception you were a unique human being never to be replicated. In the most rapid period of growth of your entire life, you grew from a tiny single cell to a newborn baby - in just nine months!

Just the Facts will help you understand how you developed from that first cell, and will take you on an incredible journey through the first nine months of your life.

CLASS  
WORKBOOK

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## Your first NINE MONTHS Factsheet

### CONCEPTION: And you're off!

Your journey begins at the moment of conception when the nuclei of your father's sperm and your mother's egg unite to create you. At conception you are just a single cell, incredibly everything you need to grow and develop is present right there in that tiny cell. Your entire genetic identity is created at conception. This means that all of your physical characteristics, such as height, hair and eye colour, are determined at that moment. Conception occurs in the fallopian tube and in a few days you will travel to your mother's womb and attach yourself to its soft lining.



### MONTH 1: You have a heartbeat!

During the first month of your life you grow so fast! Twelve times the size that you were at conception, the important organ called the placenta nourishes you. The placenta is connected to the embryo via the umbilical cord, through which you receive nutrients and oxygen from your mother. You also have a heart and lungs, and you are breathing through separate vessels in the umbilical cord. By the third week you will have a tiny heartbeat.

### MONTH 2: You've become a foetus!

You are now called a 'foetus', which is Latin for 'little one'. You are making rapid progress in the development of all of your internal and external organs. Your fingers and toes are forming. Your central nervous system is now functioning and brain waves can be recorded. By 8 weeks all of your body systems are present.



### MONTH 3: You have fingerprints!

Fingerprints and toe prints have developed and you now have your own unique set of fingerprints. You are sensitive to your own unique set of fingerprints. You are sensitive to touch and you will grasp an object placed in your hand. You breathe the amniotic fluid in the womb. You are developing your respiratory system, but you get the oxygen you need through the umbilical cord.

### MONTH 4: You're dreaming

Your brain has begun maturing - a process that will continue until you are about 14 years old. Your taste buds are working and you have begun to grow on your head, eyebrows and eyelashes. This month, REMs (rapid eye movements) can be recorded - this shows that you are dreaming.



### MONTH 5: You're half way there

You're very active now and strong enough to kick the middle of your mother's womb although she doesn't feel it. Babies have been born at this stage - as early as 12 weeks and survived.

### MONTH 6: You can respond to sound

Your oil and sweat glands are functioning, and these help to regulate temperature. A white film has covered your body and protects your delicate skin from the surrounding fluid. This waxy substance will be quickly absorbed into your skin after you're born. You now respond to sound. Loud noises startle you and the sound of your mother's voice comforts you.



### MONTH 7: You can see

Your eyelids can open and close and your eyes look forward. You can hear, taste, touch, smell and hiccup. During this time you will receive antibodies from your mother and you will receive immunity from a number of diseases.

### MONTH 8: You're almost there!

In the last two months you continue to grow and gain weight. You are developing a layer of fat that will keep you warm after you're born. You begin to change position so that your head is facing down into the birth canal. Your lungs are now developed and ready to make the transition from breathing fluid to breathing air.

## Quiz TIME

Complete this quiz after you have read the Factsheet.

1. When is your genetic identity created?
2. When does your heart first begin to beat?
3. What does 'foetus' mean?
4. What do REMs indicate? (a) When can REMs be detected?
5. Why doesn't a baby drown if he is surrounded by fluid in the womb?
6. At what gestation have premature babies been born and survived?
7. What does the umbilical cord do?
8. What position does the baby move to in preparation for birth?

## Cross WORD

Complete this crossword after you watch the Just the Facts DVD.

- Across:
1. You are attached to an organ called the \_\_\_\_\_ via the umbilical cord (1)
  2. This is another word for fertilisation (1)
  3. An EEG machine can record these (1)
  4. Months that lie in the second \_\_\_\_\_ of pregnancy (1)
  5. You give your mother oxygen and carbon \_\_\_\_\_ through the umbilical cord (1)
  6. Eye Movements that you are dreaming in the womb (1)

## Test your KNOWLEDGE!



## Questions ON THE DVD

Complete this quiz after you watch the Just the Facts DVD to see how much you have learned!

1. How many chromosomes do you receive from your mother and father at conception?
2. There are two types of twins - can you name them?
3. Identical twins develop from the same egg, fertilised by a single sperm. True or False?
4. Can you name two substances that the mother gives to the baby through the umbilical cord?
5. A woman can take a special nutrient during pregnancy to minimise the risk of her baby being born with a neural tube defect. Can you name this substance?
6. Can you name the sac in which the baby grows while in his/her mother's womb?
7. What happened during surgery on Baby Samuel Armas to correct his Spina Bifida?



Questions:

1. Babies born before 17 weeks are known as \_\_\_\_\_ babies (1)
2. There are 4 types of twin (1)
3. You receive 1/2 of these from both mother and father (1)
4. Your \_\_\_\_\_ is much faster before you are born than it is after birth (1)
5. You are surrounded by \_\_\_\_\_ fluid in the womb (1)
6. At 4 months, you're developed enough so you can enjoy food (1)
7. There remain closed until the 10th week, but they are transparent, so you can see through them (1)
8. Your \_\_\_\_\_ is built down at conception (1)

Your  
Life  
Before  
Birth

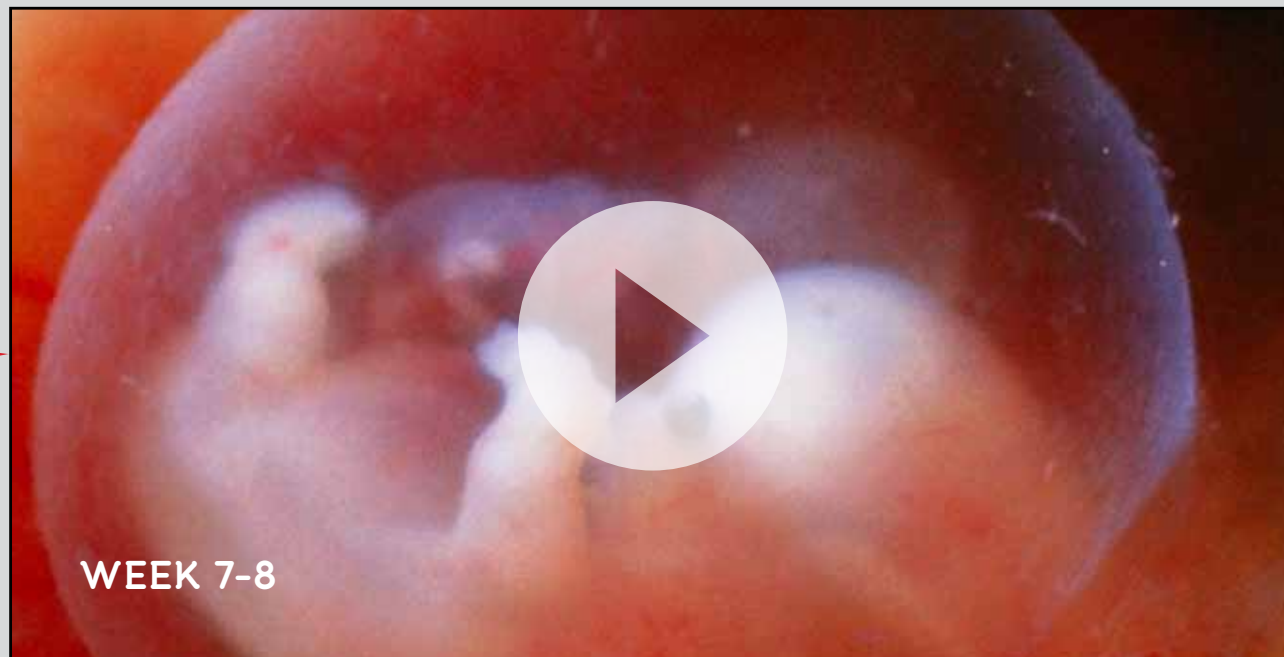


# JUST THE FACTS

12 minute movie on  
Life Before Birth



Cutting-edge  
footage of  
your journey  
from  
fertilisation  
to birth

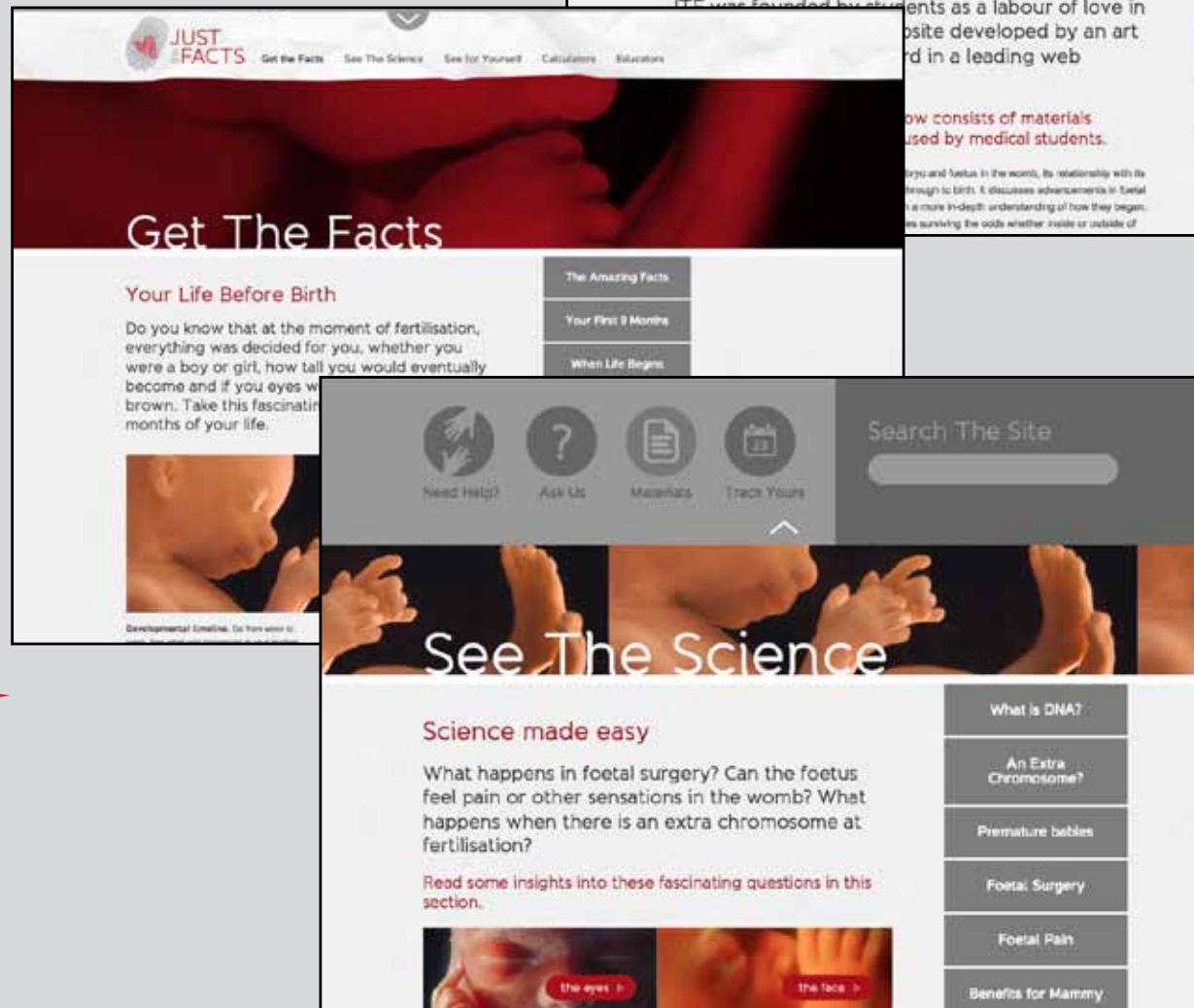


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New website for  
students and  
educators

Scientific  
materials,  
facts,  
photographs  
and videos  
on life birth



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