

Bible Mates Explorers · Australian edition

Wonderfully Made

Parent Guide: lessons, answers and family extras

Little Mates 5–7 · Middle Mates 8–10 · Big Mates 11–13 · Mapped to the Australian Curriculum v9

Wonderfully Made · Pack overview

Welcome to **Wonderfully Made**, a Human Body topic pack for the whole family, with Ruby as your guide. There are 8 lessons, one worksheet per level per lesson (24 pages), and 5 family pages: a board game, a Rainbow Wraps recipe, a moving-hand craft, a certificate and passport stickers. Through the pack the children build a life-size **Body Map**: a tracing of their own body that gains bones, muscles, a heart, lungs, senses and a food tube, one lesson at a time. Ruby's big question for the whole pack is: **How does my body keep me alive, moving and noticing the world, all at the same time?**

How to use it. Run the pack over about 2–3 weeks: 2 or 3 lessons a week, with the game and the craft in between. Everyone shares the Hook, then each child works at their own level: **Little Mates** (5–7, F–Yr 2), **Middle Mates** (8–10, Yrs 3–4) and **Big Mates** (11–13, Yrs 5–6). Middle and Big Mates collect real data from their own bodies (pulse, breath, reaction time, balance), so keep their sheets together: later lessons reuse earlier numbers. **You don't have to do everything.** Pick the parts that suit your family. A sick day, a skipped worksheet or a shortened lesson is fine: your body will still be there tomorrow.

Every body is different. Some children wear glasses or hearing aids, have asthma, allergies or diabetes, or move in their own way. Every one of them is fearfully and wonderfully made. Adapt any activity so every child can join in, and never compare children's bodies or numbers with each other: each child compares with their own earlier result. Measuring and tracing are done fully clothed. This pack leaves out the reproductive system; you can cover that in your own way and time.

Safety, every lesson. Check allergies before any food or tasting activity. Exercise tests are short and gentle: stop if a child feels dizzy, unwell or puffed out, keep an asthma reliever nearby for children who use one, and check with your doctor first if a child has a heart or breathing condition. Take a pulse with two fingers and a light touch, never pressing hard on the neck. Balloons are a choking risk for young children: a grown-up blows them up and picks up any broken pieces, and choose latex-free if anyone is allergic. Never put anything in ears, and never shine a torch straight into eyes. Wash hands before and after every food or body activity. This pack is for learning, not medical advice: if you're worried about a child's heart rate, breathing or growth, ask your doctor.

The codes in each lesson are mapped to the Australian Curriculum v9 (© ACARA, CC BY 4.0). Body systems are formally taught in Year 8 Science (Biological sciences), so the content here is enrichment, and the codes listed are mainly from Science Inquiry, Mathematics and English, with Health and Physical Education codes where they fit.

Materials for the whole pack - ☐ A roll of butcher's paper (or taped-together wrapping paper, plain side up) a little longer than your tallest child, thick markers, colouring pencils, glue and scissors - ☐ A tape measure, a 30 cm ruler, string and a timer or phone stopwatch - ☐ A rubber glove, 5 pop sticks and a clean cooked chicken drumstick bone with a jar of white vinegar (Big Mates) - ☐ Clothes pegs (Middle Mates), and a 30 cm ruler for the reaction-time drop (Big Mates) - ☐ An empty paper-towel roll or a small funnel (heart listening tube) - ☐ A clear plastic bottle (about 600 mL), 2 balloons, a rubber band and sticky tape (lung model); a 2 or 3 L plastic bottle, a sink or tub of water and a clean flexible tube or 3 bendy straws taped together (Big Mates) - ☐ A mystery bag (pillowcase), small jars for smells (lemon, orange peel, vanilla, cinnamon), tiny tastes (sugar, salt, lemon juice, cocoa, cheese), a blindfold, a mirror and a paperclip - ☐ A zip-lock bag, plain crackers or bread, an old stocking, a bowl, sugar cubes and loose sugar (Big Mates), and some food packets with nutrition labels - ☐ Cooking oil and ground cinnamon (germ test), soap and a towel - ☐ Card, straws, string, sticky tape (moving-hand craft) - ☐ Wraps, salad vegetables, cheese, a protein filling and fruit (Rainbow Wraps) - ☐ A die, counters or coins, pencils and colouring pencils

Unit verse

> "I will give thanks to you, for I am fearfully and wonderfully made. Your works are wonderful. My soul knows that very well." Psalm 139:14 (WEBBE)



HB-01

Wonderfully Made: a map of me

Little 30 · Middle 40 · Big 45 min

Day: Lesson 1 **Time:** Little 30 min · Middle 40 min · Big 45 min **Codes:** Little AC9SFU01, AC9M1M02 · Middle AC9S4I03, AC9M4M01 · Big AC9S6I04, AC9M6M01 · Science (Biological sciences) enrichment

BEFORE YOU START

Materials: butcher's paper cut a little longer than each child, thick markers, a tape measure, plain paper for Inside-Me Drawing 1. Print HB-01-L, HB-01-M and HB-01-B.

Parent need-to-know. The body is made of tiny living **cells**: an adult has about 30 trillion of them. Cells of the same kind make **tissues**, tissues make **organs** (body parts with a special job, like the heart, lungs, brain and stomach), and organs work together in **systems**. The main systems in this pack: **skeletal** (bones hold you up and protect soft organs), **muscular** (muscles move you), **circulatory** (heart and blood vessels carry blood), **respiratory** (lungs bring in oxygen and get rid of carbon dioxide), **nervous** (brain, nerves and senses send messages) and **digestive** (breaks food down so the body can use it). Skin is the body's largest organ. No system works alone: running uses bones, muscles, heart, lungs and brain all at once.

Watch for: "My heart is in my tummy" or "Food goes into my lungs". Draw them out now; don't correct yet.

TODAY'S GOALS

	Little Mates	Middle Mates	Big Mates
We are learning to…	name the outside parts of my body and some parts inside.	measure my body and name the body's main systems.	use measurements and ratios to compare bodies, and explain how systems work together.
I can…	point to and name body parts · measure my Body Map in hand spans · say what my heart and brain do	measure in centimetres · change cm to m and cm · match each system to its job	calculate and compare ratios · read a data table · describe how two systems work together

WORDS TO KNOW

- **body**: all of you, from your head to your toes
- **heart**: the organ in your chest that pumps blood
- **brain**: the organ in your head that thinks and sends messages
- **organ**: a body part with a special job, like the heart or the stomach
- **system**: a team of body parts that work together for one job
- **cell**: the tiniest living building block of your body

HOOK

Inside-Me Drawing 1 (5 min, everyone). "Draw yourself and everything you think is inside you." Don't help or correct. Date it and keep it: the children redo it in Lesson 8.

Then ask Ruby's question: **"Your heart is beating right now and you didn't tell it to. What else is your body doing all by itself?"** Write every idea on a family chart (*Think · Want to know · Learned · How we know*).

LINE

Everyone (10 min). Each child lies on the butcher's paper, arms a little out from their sides, and a grown-up traces around them with a marker. Write the child's name and the date at the top. This is their **Body Map**; it hangs on a wall or door for the rest of the pack.

Little Mates. "Let's name the outside parts first." Point together to head, shoulders, elbows, hands, knees and feet on the map, then on your own body. *Worked example:* place your hand, fingers spread, at the top of the Body Map's head. "One hand span." Walk your hand down the map, counting out loud, to the feet. Then: "Under your skin are organs. Your brain is in your head and thinks for you. Your heart is in your chest, a little to the left, and pumps blood." Draw a heart and a brain in the right places on the map.

Middle Mates. "Scientists measure carefully so they can compare. We'll measure in centimetres, from the zero end of the tape." *Worked example:* measure the child's height against a wall: "The tape says 132. That's 132 cm, which is 1 m and 32 cm, because 100 cm make 1 m." Then arm span, finger tip to finger tip. "Is your arm span close to your height?" Introduce the six systems with one action each: knock on a bone (skeletal), flex an arm (muscular), hand on chest (circulatory), big breath (respiratory), tap your head (nervous), rub your tummy (digestive).

Big Mates. "A **ratio** compares two measurements by dividing. If arm span ÷ height is about 1, the two are about the same." *Worked example:* a grown-up's arm span is 182 cm and height 180 cm: 182 ÷ 180 ≈ 1.01. A 2-year-old is 88 cm tall with a head 17 cm high: 88 ÷ 17 ≈ 5.2, so the toddler is about 5 heads tall; a grown-up at 180 ÷ 23 ≈ 7.8 is nearly 8 heads tall. "Young children's heads are big for their bodies. Why might that be?" (The brain grows very early.) Then the systems: "Name a job your body does that needs at least two systems."

⚓ SINKER

- **Little Mates:** HB-01-L *My Amazing Body*. Read each item aloud; the child points, counts, ticks and draws.
- **Middle Mates:** HB-01-M *Measure Me*. Measure a grown-up too if they'll lie still.
- **Big Mates:** HB-01-B *Body by Numbers*. Use a calculator only to check.

Reflect. "Which part of your body do you think works the hardest?" Then each child colours their "How did I go?" line.

✅ ANSWERS

Little (HB-01-L). 1. Trace *body, heart, brain*. 2. Points to each part. 3. a) **2** b) **5** c) **10**. 4. Own count (most children's maps are about 7–9 of their own hand spans). 5. **Brain.** 6. **Heart.** 7. Drawings vary.

Middle (HB-01-M). 1. Own measurements. 2. 128 − 126 = **2 cm**; **yes**, about the same. 3. **Between 6 and 7** (6 × 19 = 114 cm, 7 × 19 = 133 cm). 4. **1 m 28 cm**. 5. a) **C** b) **E** c) **A** d) **F** e) **B** f) **D**. 6. **True.** 7. For example: muscles and bones (to move), heart and lungs (to get oxygen to the muscles).

Big (HB-01-B). 1. a) 182 ÷ 180 ≈ **1.01** b) 149 ÷ 150 ≈ **0.99**; arm span is about the same as height. 2. a) 27 ÷ 180 = **0.15** b) **15%** c) 23 ÷ 150 ≈ **0.15**, so the pattern holds. 3. Grown-up **7.8**, 12-year-old **7.1**, 6-year-old **6.1**, 2-year-old **5.2**. 4. The younger the person, the bigger the head compared with the body. 5. About **162 cm**. 6. Own measurements and comparison. 7. **30 000 000 000 000**; **13** zeros. 8. Skeletal: bones, skull, spine · holds you up and protects organs. Circulatory: heart, blood vessels · carries blood around the body. Digestive: mouth, stomach, intestines · breaks down food. Nervous: brain, nerves · sends messages. 9. For example: "My muscles pull on my bones to climb, while my heart and lungs send extra oxygen to those muscles."

✝ FAITH THREAD

After the Body Map (2 min). Stand beside the tracings and read the unit verse: "I will give thanks to you, for I am fearfully and wonderfully made. Your works are wonderful. My soul knows that very well." Psalm 139:14. Little: "Point to one part of your Body Map you want to say thank you for." Middle: "What do you think 'wonderfully made' means?" Big: "The psalm writer didn't know about cells or systems. Does knowing more make the verse feel bigger or smaller to you?"

☆ KEEP THIS ONE

Inside-Me Drawing 1 (dated) and the Body Map. The drawing is the "before" picture for Lesson 8; the map grows every lesson.



HB-02

Bones and Joints: the frame inside

Little 30 · Middle 40 · Big 45 min

Day: Lesson 2 **Time:** Little 30 min · Middle 40 min · Big 45 min (plus a 1-minute vinegar-bone check each day for 3–5 days) **Codes:** Little AC9SFU01, AC9S2I03, AC9M1N01 · Middle AC9S4I03, AC9S4I04 · Big AC9S6I05, AC9M6N09 · Science (Biological sciences) enrichment

BEFORE YOU START

Materials: a rubber glove, 5 pop sticks, a jug of water, the Body Map, white paper and scissors (paper bones), sticky tape. Big: a clean, cooked chicken drumstick bone (scrubbed and dried), a jar with a lid and enough white vinegar to cover it, and a second bone kept dry for comparison. Print HB-02-L, HB-02-M and HB-02-B.

Safety. Use a cooked bone, not raw chicken, scrub it in hot soapy water, and wash hands after touching it. Keep the vinegar jar out of reach of little ones; don't taste it.

Parent need-to-know. An adult skeleton has **206 bones**. A newborn has about 300 bones and bone parts; many join (fuse) as children grow. More than half the bones are in the hands and feet: 27 in each hand and 26 in each foot. The longest bone is the thigh bone (**femur**), roughly a quarter of a person's height; the smallest is the **stapes** in the middle ear, about 3 mm long. Bones hold the body up, give muscles something to pull on, and protect soft organs: the **skull** protects the brain, the **ribs** (12 pairs) protect the heart and lungs, and the **spine** protects the spinal cord. Bones are alive: they have blood vessels, they grow and heal, and the soft **marrow** inside some bones makes blood cells. Calcium makes bones hard; a stretchy protein (collagen) stops them snapping. Where bones meet is a **joint**: hinge (elbow, knee: like a door), ball-and-socket (shoulder, hip: moves in many directions), pivot (top of the neck: turning your head) and gliding (the small bones in the wrist slide over each other).

Watch for: "Bones are dead, like chalk." They're living organs.

TODAY'S GOALS

	Little Mates	Middle Mates	Big Mates
We are learning to…	say what our bones do.	name joints and use bone numbers to add and subtract.	use bone data and a test to explain what bones are made of and how they're built.
I can…	feel my bones · count the bones in my fingers · say which bones protect my brain	name 4 kinds of joint · add and subtract bone numbers · say which bones protect which organs	calculate percentages · estimate height from a femur · predict and explain the vinegar-bone result

WORDS TO KNOW

- **bone**: a hard, living part of your body that holds you up
- **skeleton**: all the bones of your body joined together
- **joint**: a place where two bones meet so you can bend or turn
- **skull**: the bones of your head that protect your brain
- **spine**: your backbone, a column of small bones down your back
- **marrow**: the soft middle of some bones, where blood cells are made

HOOK

The Floppy Glove (3 min). Fill the rubber glove with water, tie it off and try to make it stand up on the table. It flops. Empty it, slide a pop stick into each finger and the thumb, and stand it up again. "What do your bones do for you? What would you be like with no bones at all?"

Big Mates: put one chicken bone in the jar of vinegar now and leave the other dry. Predict what will happen by Lesson 4.

WONDERFULLY MADE · LITTLE MATES

My Amazing Body

Name: _____ Date: _____

🔤 **Words to know:** body · heart · brain



A child's Body Map

1. Trace the words.
   b o d y · h e a r t · b r a i n
2. Point to each part on your body. Tick it when you find it.
   ☐ head ☐ shoulders ☐ elbow ☐ hand ☐ knee ☐ foot
3. Count on yourself.
   a) I have _____ eyes.
   b) I have _____ fingers and thumbs on one hand.
   c) I have _____ fingers and thumbs on both hands.
4. My Body Map is _____ hand spans long.
5. Circle the organ that helps me think.



heart



brain

stomach

6. Circle the organ that pumps my blood.



heart



brain

stomach

7. draw: my favourite thing my body can do

How did I go? 🟢 🟡 🔴

WONDERFULLY MADE · LITTLE MATES

Bone Builder

Name: _____ Date: _____

Words to know: bone · skeleton · joint



skeleton

1. Trace the words. b o n e · s k e l e t o n
2. Bend your fingers. Feel the bones.
   a) My pointer finger has _____ bones.
   b) My thumb has _____ bones.
3. Year 2: count by 3s for 4 fingers. 3, _____, _____, _____
   Add the thumb's 2 bones. _____ + 2 = _____
4. My skull protects my…
   ☐ brain ☐ toes
5. Which can bend? Tick them.
   ☐ elbow ☐ knee ☐ the middle of my upper arm
6. The floppy glove.
   No sticks: ☐ floppy ☐ standing up
   With sticks: ☐ floppy ☐ standing up
7. draw: me, with my bones inside

How did I go? ○ ○ ○



WONDERFULLY MADE · MIDDLE MATES

Measure Me

Name: _____ Date: _____

🔤 **Words to know: body**: all of you, from your head to your toes · **heart**: the organ in your chest that pumps blood · **brain**: the organ in your head that thinks and sends messages · **organ**: a body part with a special job, like the heart or the stomach · **system**: a team of body parts that work together for one job

1. Measure in centimetres.

	Me (cm)	A grown-up (cm)
Height	_____	_____
Arm span (finger tip to finger tip)	_____	_____
Foot length	_____	_____
Hand span	_____	_____

2. Tilly is 128 cm tall. Her arm span is 126 cm. What is the difference? _____ cm
   Is her arm span about the same as her height? _____
3. Tilly's foot is 19 cm long. How many of her feet would fit in her height? Use repeated adding.
   _____
4. Write Tilly's height in metres and centimetres: _____ m _____ cm
5. Write the letter of the job next to each system.
   Jobs: A carries blood around the body · B breaks down food · C holds you up and protects organs · D sends messages · E moves your bones · F brings in air
   a) skeletal (bones) _____
   b) muscular (muscles) _____
   c) circulatory (heart and blood) _____
   d) respiratory (lungs) _____
   e) digestive (stomach and intestines) _____
   f) nervous (brain and nerves) _____
6. True or false: your body is made of tiny living cells. _____
7. You run to catch a ball. Name two systems that work together. _____

How did I go? 🟢 🟡 🔴



Joint Detective

Name: _____ Date: _____

🔤 **Words to know: bone**: a hard, living part of your body that holds you up · **skeleton**: all the bones of your body joined together · **joint**: a place where two bones meet so you can bend or turn · **skull**: the bones of your head that protect your brain · **spine**: your backbone, a column of small bones down your back

1. Test each joint. Write its type: *hinge · ball-and-socket · pivot · gliding*

Joint	Type	How it moves
Elbow	_____	_____
Knee	_____	_____
Shoulder	_____	_____
Hip	_____	_____
Top of the neck	_____	_____
Wrist bones	_____	_____

2. Each hand has 27 bones. Each foot has 26 bones.
   a) Both hands: _____ bones
   b) Both feet: _____ bones
   c) Hands and feet together: _____ bones
   d) An adult has 206 bones. How many are not in the hands or feet? _____
3. You have 12 pairs of ribs. How many ribs is that? _____
4. A newborn baby has about 300 bones and bone parts. An adult has 206. About how many fewer is that? _____ Why? _____
5. Tape a pop stick along your pointer finger and write your name. What happened?
   _____
6. Which bones protect…
   a) the brain? _____ b) the heart and lungs? _____ c) the spinal cord? _____

How did I go? 🟢 🟡 🔴



WONDERFULLY MADE · BIG MATES

Body by Numbers

Name: _____ Date: _____

🔤 **Words to know: body**: all of you, from your head to your toes · **heart**: the organ in your chest that pumps blood · **brain**: the organ in your head that thinks and sends messages · **organ**: a body part with a special job, like the heart or the stomach · **system**: a team of body parts that work together for one job · **cell**: the tiniest living building block of your body

One family's measurements (cm)

Person	Height	Arm span	Foot length	Head height (chin to top)
Grown-up	180	182	27	23
12-year-old	150	149	23	21
6-year-old	116	114	18	19
2-year-old	88	86	14	17

1. Arm span ÷ height (2 decimal places):
   a) Grown-up _____ b) 12-year-old _____ What do you notice? _____
2. a) Foot length ÷ height for the grown-up: _____
   b) Write it as a percentage. _____ %
   c) Check the 12-year-old. Does the pattern hold? _____
3. Height ÷ head height (1 decimal place). How many "heads tall" is each person?
   Grown-up _____ 12-year-old _____ 6-year-old _____ 2-year-old _____
4. What pattern do you see in question 3? _____
5. A person's arm span is 1.62 m. Estimate their height. _____ cm
6. Measure yourself. My height _____ cm · my arm span _____ cm · arm span ÷ height = _____
7. An adult body has about 30 trillion cells. Write 30 trillion in digits. _____ How many zeros? _____
8. Complete the table.

System	Main parts	Job
Skeletal	_____	_____
Circulatory	_____	_____
Digestive	_____	_____
Nervous	_____	_____

9. Explain how two systems work together when you climb a tree.

_____

_____

How did I go?

