



USER MANUAL

Simplified Ceph

Trace a head X-ray, measure it, and get a full cephalometric report. Every screen, button and field explained in plain words.



Simplified Orthodontics Studio
by Simplified Orthodontics Academy
simplifiedortho.pages.dev

Illustrated guide to every screen,
button and field
Edition: September 2026

Contents

1	What Simplified Ceph does	2
2	Opening the tool	3
3	The screen at a glance	4
4	The top bar	5
5	The five-step workflow	5
6	Patient and record form	6
7	Calibrating the image	7
8	Placing landmarks	9
9	The tool column	11
10	Display buttons and image adjustment	12
11	The landmark action bar	12
12	The analysis panel	14
13	The ten analyses	16
14	The frontal (PA) view	18
15	Building the report	19
16	The Project menu: saving and reopening a case	21
17	Using Simplified Ceph on a phone	22
18	Keyboard and mouse shortcuts	22
19	All landmarks and where to click	24
20	Glossary of abbreviations	26
21	Problems and answers	26

1 What Simplified Ceph does

Simplified Ceph is a tool for **cephalometric analysis**. "Cephalometric" simply means *measuring the head*: you open a side X-ray (or a front X-ray) of the patient's head, you click on known anatomical points, and the tool measures the angles and distances between them for you. It then compares every number with the normal range and writes a short interpretation.

- You place the points yourself (manual placement). The tool does all the arithmetic.
- Ten complete analyses are built in: Downs, Steiner, Wits, McNamara, Ricketts, Tweed-Merrifield, Soft tissue profile, Holdaway, Proportions and divergence, and the Ricketts frontal analysis.
- It works inside your web browser. The X-ray never leaves your device; nothing is uploaded.
- After the first visit it also works without an internet connection.
- It is one of the three tools of **Simplified Orthodontics Studio** (the other two are Simplified Cast and Simplified Practice).

Words you will meet in this manual

WORD	PLAIN MEANING
Cephalogram / "ceph"	An X-ray of the head taken in a standard position so it can be measured. Also called a cephalometric radiograph or headfilm.
Lateral	The side view of the head. This is the X-ray used for almost all analyses.
Frontal (PA)	The front view. PA stands for <i>posteroanterior</i> : the X-ray beam travels from the back of the head to the front.
Landmark	A named anatomical point that you click on the X-ray, for example Sella(S) or Nasion(N).
Tracing	The white outline the tool draws by joining your landmarks.
Plane	A straight reference line through two landmarks, for example the Frankfort horizontal (FH) plane.
Calibration	Telling the tool how many millimetres one image dot represents, so that distances come out in real millimetres.
Pixel (px), mm/px	A pixel is one dot of the image. "0.2000 mm/px" means each dot equals 0.2 millimetre in real life.
Norm, SD	The norm is the average value in people with good occlusion. SD (standard deviation) is the usual spread around it. "82 ± 2" means norm 82, normal range 80 to 84.
JPG, PNG, BMP, WebP	Common picture file types. Simplified Ceph opens all of these.
DICOM	The medical imaging file type used by X-ray machines. It is not opened directly: export the X-ray as JPG or PNG from your imaging software first.
JSON project file	A file ending in .json that stores the whole case (patient details, X-rays, landmarks, calibration) so you can reopen it later.
CSV	A simple table file that opens in Excel or Google Sheets.
PDF	A fixed document file for printing or sending.

2 Opening the tool

- 1 Open **simplifiedortho.pages.dev** in Chrome, Edge, Safari or Firefox and choose **Simplified Ceph**. The direct address is **simplifiedortho.pages.dev/ceph/**.
- 2 The first time on each device, a small window asks for your email address. Type it and press **Continue**. It is asked only once. If you are offline the window is skipped.
- 3 To use it like an app on a phone, tablet or computer, open the **Install** page from the Studio home screen and follow the steps there. Once installed it opens from its own icon and works offline.

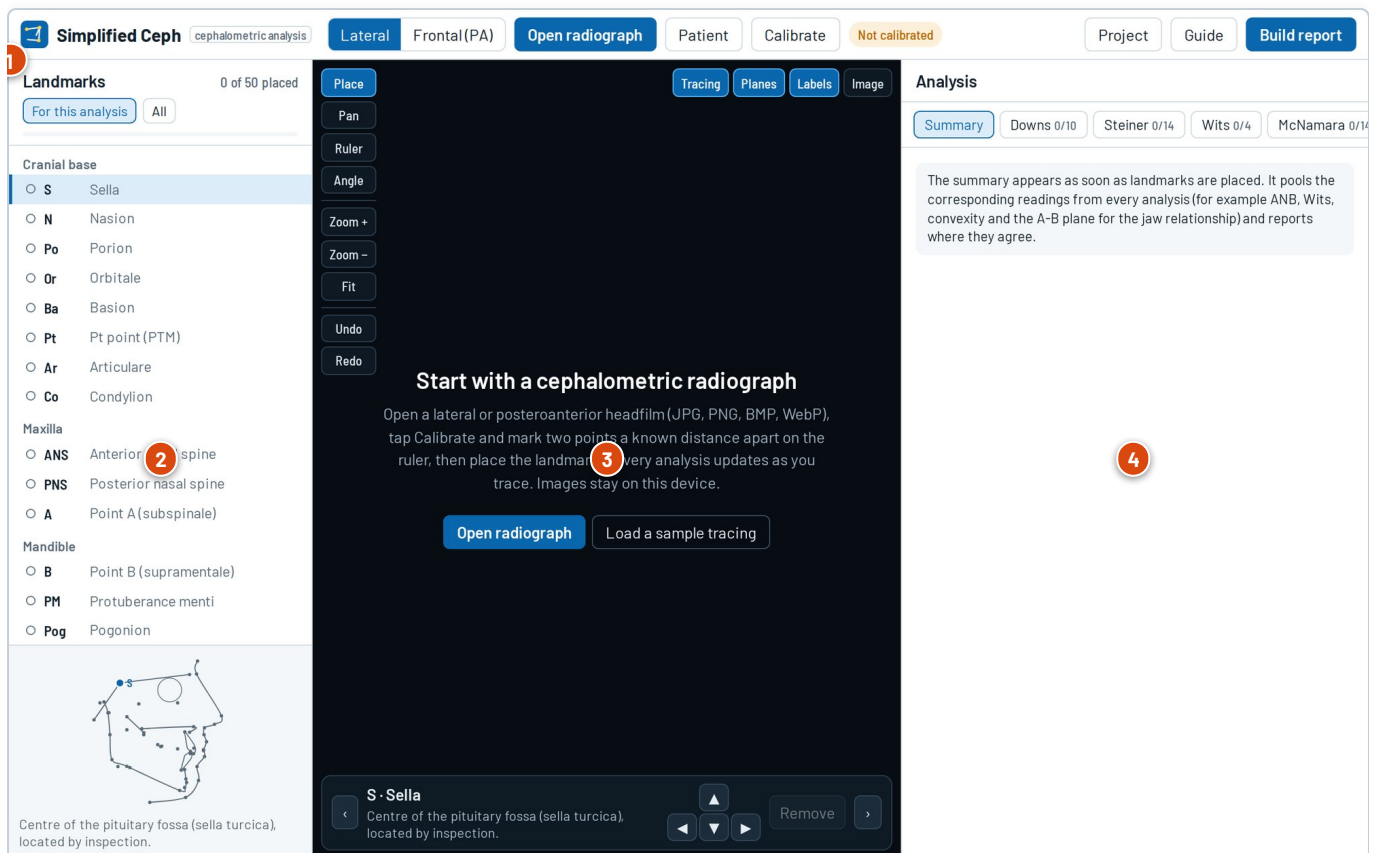


Figure 1. The start screen. 1 top bar, 2 landmark list, 3 X-ray viewer, 4 analysis panel.

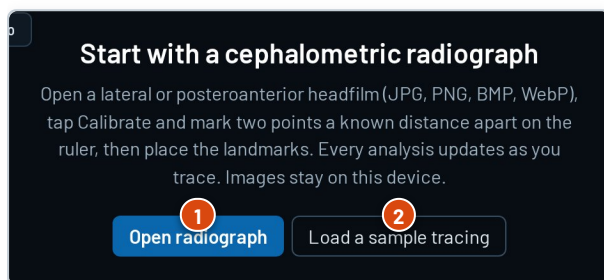


Figure 2. The two buttons in the middle of the empty viewer.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Open radiograph	Opens a file chooser. Pick the patient's X-ray picture (JPG, PNG, BMP or WebP). You can also drag a picture from a folder and drop it on the viewer.
2 Load a sample tracing	Loads a ready-made set of landmarks so you can explore the tool without a patient. Use it to practise: drag any point and watch the numbers change.

3 The screen at a glance

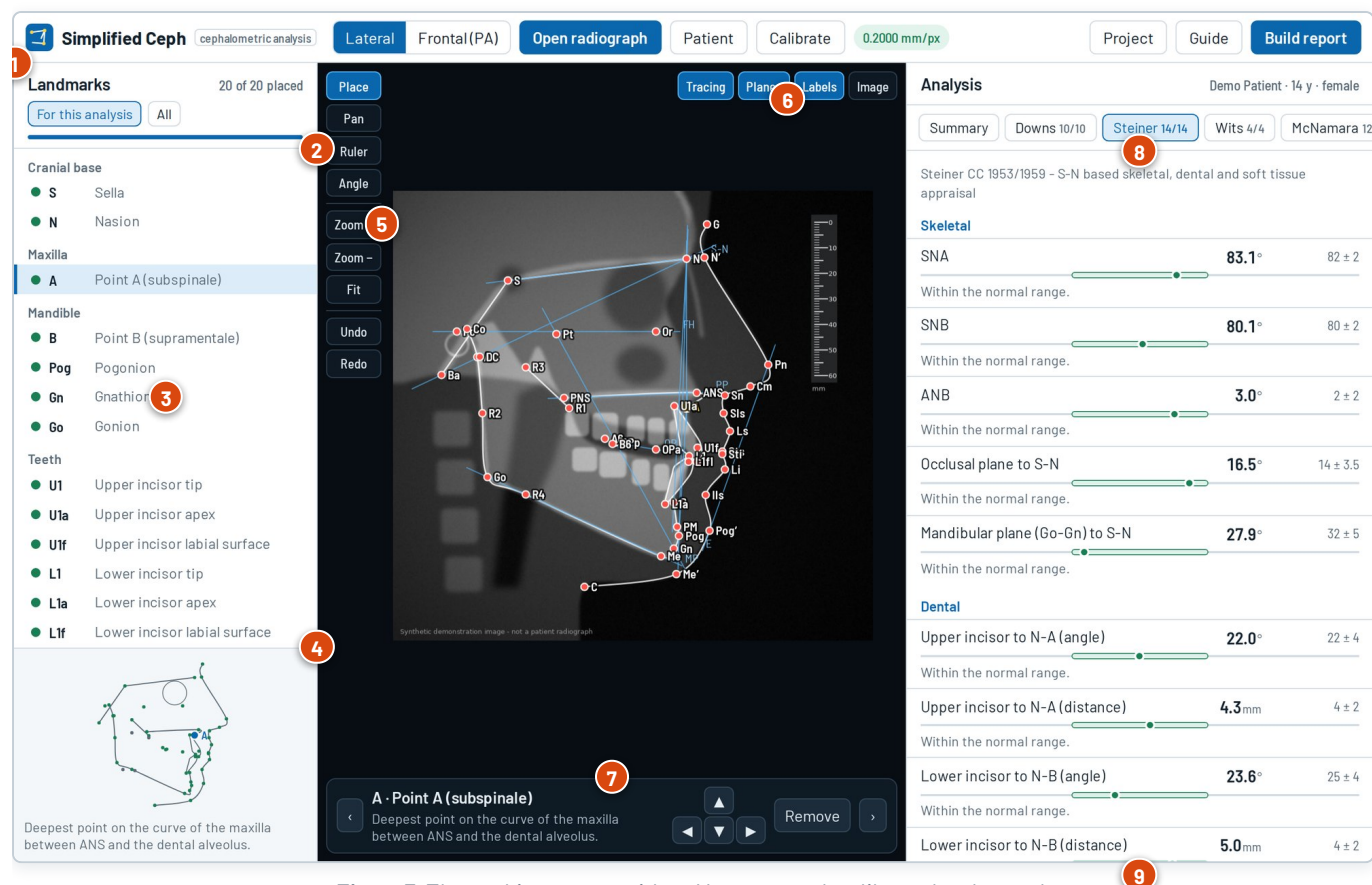


Figure 3. The working screen with an X-ray opened, calibrated and traced.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Top bar	Choose the view, open the X-ray, enter the patient, calibrate, manage the project, open the guide and build the report. See chapter 4.
2 Landmark header	Shows how many landmarks are placed and lets you filter the list. See chapter 8.
3 Landmark list	Every point you need to click, grouped by region. The highlighted row is the active landmark: the next click on the X-ray places it.
4 Reference map	A small skull drawing that shows where the active landmark lies, with its definition underneath.
5 Tool column	Place, Pan, Ruler, Angle, Zoom, Fit, Undo and Redo. See chapter 9.
6 Display buttons	Show or hide the tracing, planes and labels, and adjust the image. See chapter 10.
7 Landmark action bar	Name and definition of the active landmark, fine-move arrows, Remove, previous and next. See chapter 11.
8 Analysis tabs	One tab per analysis plus the Summary. The small counter (for example 14/14) shows how many of its measurements can already be calculated.
9 Results	Every measurement of the chosen analysis with its value, norm, a range bar and an interpretation. See chapter 13.

4 The top bar



Figure 4. Left part of the top bar.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Lateral	Work on the side X-ray. This view has 50 landmarks and nine analyses.
2 Frontal (PA)	Work on the front X-ray. This view has its own image, its own calibration, 21 landmarks and the Ricketts frontal analysis. See chapter 15.
3 Open radiograph	Choose the X-ray picture for the view that is currently selected. Opening a new picture clears the landmarks and calibration of that view.
4 Patient	Opens the patient form (chapter 6). Age and sex matter because some norms change with them.
5 Calibrate	Starts calibration on the ruler seen in the X-ray (chapter 7).
6 Scale chip	Orange "Not calibrated" until you calibrate; then green with the scale, for example "0.2000 mm/px". If you removed magnification it also shows the percentage.

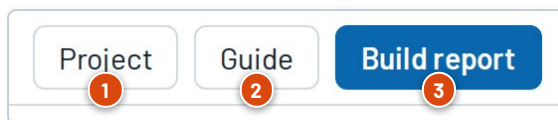


Figure 5. Right part of the top bar.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Project	Save the case to a file, reopen a case, export numbers, clear or start again (chapter 17).
2 Guide	A short built-in reminder of the workflow and the keyboard shortcuts.
3 Build report	Creates the complete report with all analyses, ready to print or save as PDF (chapter 16).

5 The five-step workflow

- 1 Open the X-ray (**Open radiograph**).
- 2 Enter the **patient** age and sex (**Patient**).
- 3 **Calibrate** on the ruler in the film (**Calibrate**).
- 4 Pick an analysis on the right and **place the landmarks** it asks for. Results appear while you click.
- 5 Press **Build report**, then print or save as PDF. Save a project file so you can reopen the case.

TIP

Angles and ratios do not need calibration. Distances in millimetres do. If you only need angles (for example SNA, SNB, ANB) you may skip step 3.

6 Patient and record form

Patient and record

Age and sex select the matching norms (Wits, McNamara, Ricketts growth-adjusted values, frontal widths).

1 Patient name
Demo Patient

2 Record number
SO-0001

3 Age (years)
14

4 Sex
Female

5 Dentition
Permanent

6 Radiograph date
09/20/2026

7 Clinician / clinic
Simplified Orthodontics Academy

8 Clinical notes (printed in the report)
Synthetic demonstration case.

9 Cancel

10 Save patient

Figure 6. The Patient form.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Patient name	Printed at the top of the report.
2 Record number	Your file number for this patient.
3 Age (years)	Selects age-matched norms (Wits, McNamara, Ricketts growth-adjusted values and frontal widths). Decimals are allowed, for example 11.5.
4 Sex	Female or Male. Selects the matching norms.
5 Dentition	Permanent or Mixed (baby and adult teeth together).
6 Radiograph date	The date the X-ray was taken.
7 Clinician / clinic	Printed under the report title.
8 Clinical notes	Free text printed at the end of the report under "Clinical notes and impression".
9 Cancel	Closes the form without saving.
10 Save patient	Saves the details. The age and sex then appear at the top of the analysis panel.

7 Calibrating the image

Calibration converts image dots into real millimetres. Most cephalograms show a small metal ruler near the nose. You mark two points on that ruler and type the real distance between them.

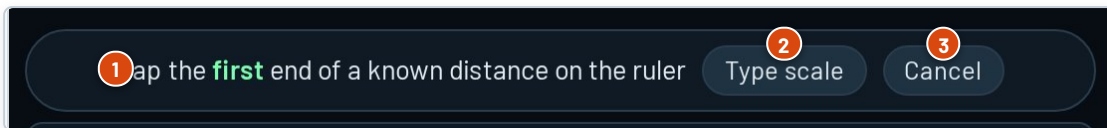


Figure 7. After pressing Calibrate, this bar appears at the bottom of the viewer.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Instruction	Tells you what to tap next: first the first end of a known distance, then the second end.
2 Type scale	Skips the tapping and opens the form directly, so you can type the pixel size if your imaging software tells you it.
3 Cancel	Leaves calibration without changing anything.

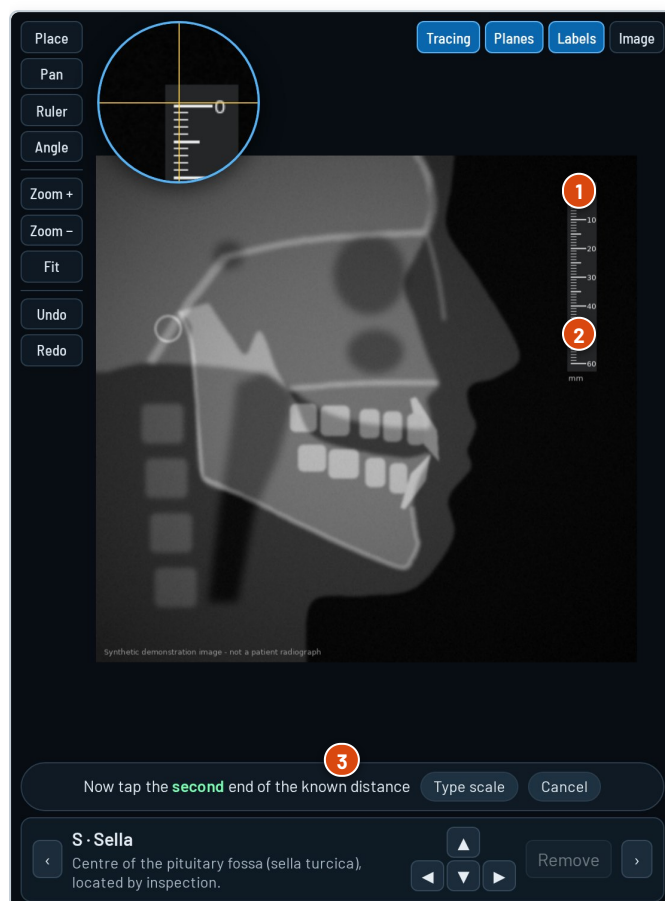


Figure 8. Tap two marks on the ruler, for example 0 and 50.

NAME	WHAT IT DOES AND HOW TO USE IT
1 First point	Tap exactly on a ruler mark, here the 0 mark. Zoom in first for accuracy.
2 Second point	Tap a mark far from the first, here the 50 mm mark. A longer distance gives a more accurate scale.
3 Instruction bar	Changes from "first" to "second" after the first tap.

Figure 9. The calibration form opens after the second tap.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Distance between the two marked points (mm)	Type the real distance, for example 50.
2 Marked distance on screen	How many pixels lie between your two taps. Filled in for you.
3 Resulting scale	The calculated millimetres per pixel. Filled in for you.
4 Advanced	Opens two optional fields.
5 Pixel size (mm per pixel)	If your imaging software states the pixel size, type it here instead of using the ruler.
6 Magnification to remove (%)	X-rays enlarge the head slightly. If you know the enlargement of your machine, type it to get life-size values. Leave 0 when the ruler sits in the middle plane of the head, because then it is enlarged exactly like the patient.
7 Cancel	Closes without applying.
8 Re-mark points	Lets you tap the two ruler points again.
9 Apply	Saves the scale. The chip in the top bar turns green.

Figure 10. After Apply, the chip shows the scale and a message confirms it.

NOTE

The lateral and the frontal view are calibrated separately, because they are two different pictures.

8 Placing landmarks

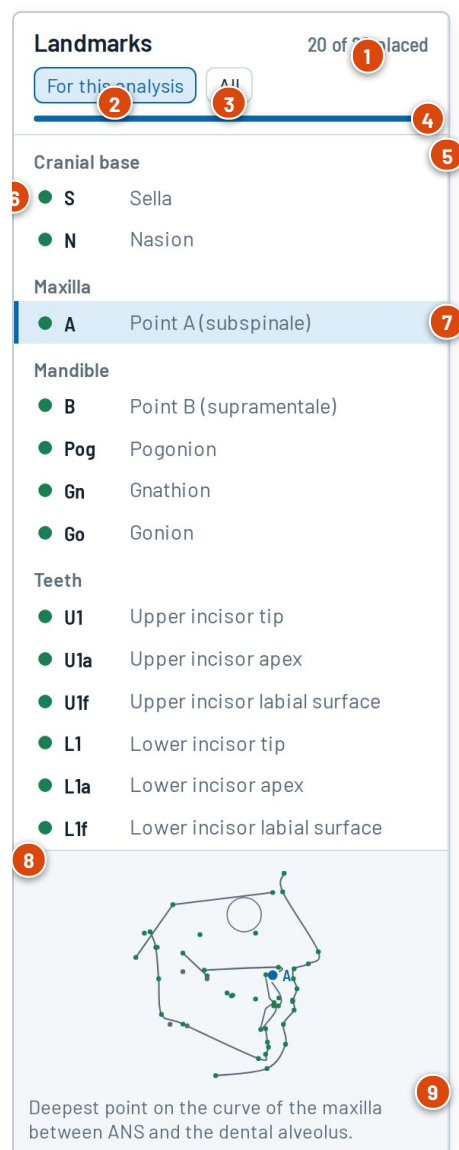


Figure 11. The landmark panel.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Counter	How many landmarks of the current list are placed, for example "20 of 20 placed".
2 For this analysis	Shows only the landmarks needed by the analysis tab that is open on the right. This keeps the list short.
3 All	Shows all landmarks of the view (50 lateral, 21 frontal).
4 Progress bar	Fills as you place points.
5 Group title	Landmarks are grouped: Cranial base, Maxilla, Mandible, Teeth, Soft tissue, Airway.
6 Status dot	Empty ring = not placed yet. Green dot = placed.
7 Active landmark	The highlighted row. Your next click on the X-ray places this point. Click any row to make it active.
8 Reference map	Shows where the active landmark lies on a schematic skull.
9 Definition	The textbook definition of the active landmark, so you know exactly where to click.

How to place, move and remove a point

- 1 Make sure **Place** is selected in the tool column.
- 2 Click (or tap) on the X-ray where the active landmark lies. A red dot appears and the next landmark becomes active automatically.
- 3 To correct a point, drag it. A magnifier follows the pointer so you can see fine detail.
- 4 For very small corrections use the arrow buttons in the action bar, or the keyboard arrows (**Shift** + arrow moves ten times further).
- 5 To delete a point press **Remove**, press **Del**, or right-click the point.

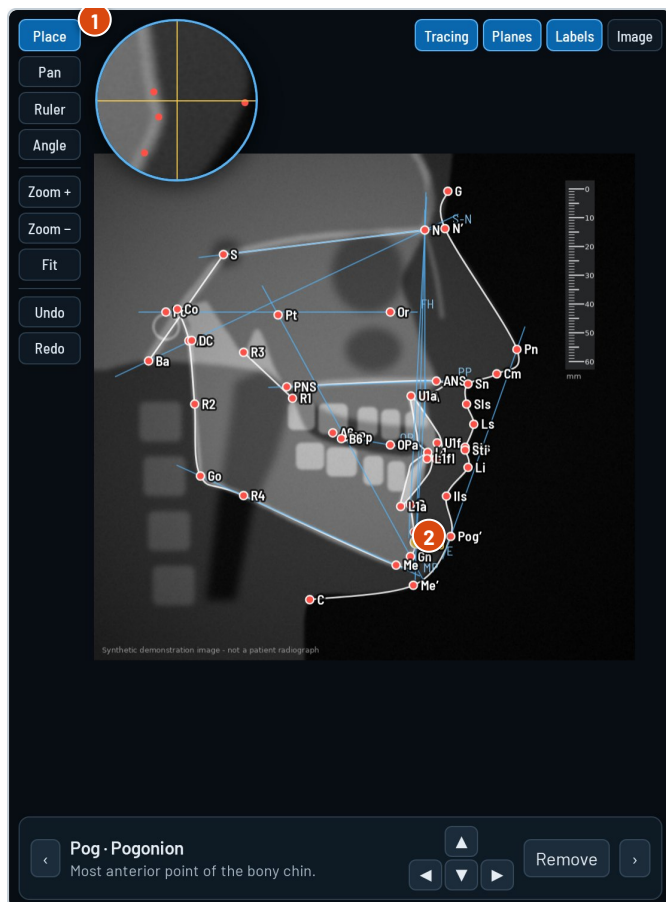


Figure 12. The magnifier (loupe) while placing a point.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Magnifier	An enlarged view of the area under the pointer. It follows brightness, contrast and invert settings.
2 Pointer	The exact spot that will be marked when you click.

9 The tool column

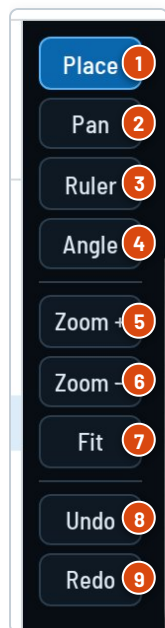


Figure 13. Tools at the left edge of the viewer.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Place	Normal mode. Click to drop the active landmark, drag to move any landmark. Shortcut V .
2 Pan	Drag the picture around. You can also hold Space and drag in any mode, or use two fingers on a touch screen.
3 Ruler	Measure any distance: click two points. The length is written next to the line (in millimetres once calibrated).
4 Angle	Measure any angle: click three points. The second click is the corner of the angle.
5 Zoom +	Zoom in. Shortcut + . The mouse wheel or a two-finger pinch also zooms.
6 Zoom -	Zoom out. Shortcut - .
7 Fit	Show the whole picture. Shortcut F .
8 Undo	Take back the last change. Shortcut Ctrl + Z .
9 Redo	Repeat what you undid. Shortcut Ctrl + Y .

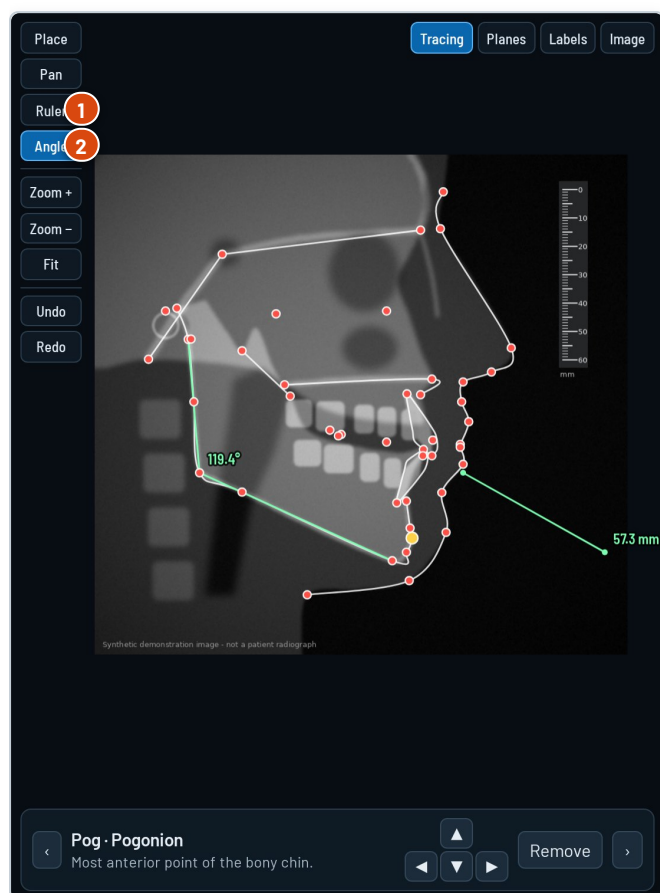


Figure 14. A free ruler measurement and a free angle (Ar-Go-Me) drawn with the Ruler and Angle tools. Planes and labels are hidden here for clarity.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Ruler	Two clicks. Use it for any extra distance you want to check.
2 Angle	Three clicks; the middle one is the corner. Remove all free measurements with Image → Clear rulers .

10 Display buttons and image adjustment

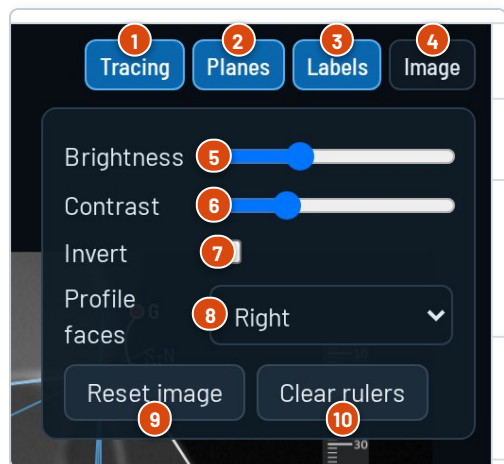


Figure 15. Display buttons with the Image panel open.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Tracing	Shows or hides the white outline that joins your landmarks (profile, mandible, palate, cranial base, incisors).
2 Planes	Shows or hides the blue reference lines: S-N, FH, PP (palatal plane), OP (occlusal plane), MP (mandibular plane), N-A, N-B, N-Pog, A-Pog, Ba-N, Pt-Gn and the E-line.
3 Labels	Shows or hides the short name next to each point.
4 Image	Opens the adjustment panel below.
5 Brightness	Slide to lighten or darken the X-ray.
6 Contrast	Slide to make bone edges stand out.
7 Invert	Swaps black and white. Some landmarks are easier to see inverted.
8 Profile faces	Right or Left. Tell the tool which way the face looks in your picture so that "in front" and "behind" are calculated correctly.
9 Reset image	Puts brightness, contrast and invert back to normal.
10 Clear rulers	Deletes all free Ruler and Angle measurements.

NOTE

Image adjustments only change what you see. They never change the measurements or the saved picture.

11 The landmark action bar



Figure 16. The bar under the viewer.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Previous <	Makes the previous landmark in the list active. Shortcut P .
2 Name	Short code and full name of the active landmark.
3 Definition	Where exactly to click.
4 Nudge arrows	Move the active landmark one small step up, down, left or right.

NAME	WHAT IT DOES AND HOW TO USE IT
5 Remove	Deletes the active landmark so you can place it again.
6 Next ›	Makes the next landmark active. Shortcut N .

12 The analysis panel



Figure 17. The Summary tab.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Patient line	Name, age and sex currently used for the norms.
2 Summary tab	Pools the matching readings from every analysis and tells you where they agree.
3 Analysis tabs	Downs, Steiner, Wits, McNamara, Ricketts, Tweed-Merrifield, Soft tissue profile, Holdaway, Proportions and divergence. Scroll sideways to reach them all. The counter shows measurements ready / total.
4 Summary card	Each card covers one question (jaw relationship, maxilla, mandible, vertical pattern, upper incisors, lower incisors, incisor relationship, lips, chin). It states how many indicators were available, the conclusion, and the values behind it. A green edge means normal, an orange edge means a finding. Values outside the normal range are written in orange.

Reading one measurement row

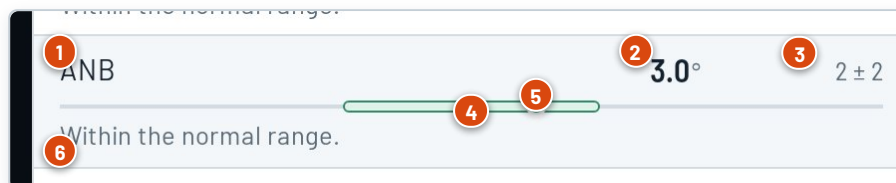


Figure 18. Anatomy of a result row.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Measurement name	For example ANB.
2 Patient value	With its unit: ° for angles, mm for distances, % for ratios.
3 Norm	Average ± one standard deviation for this patient's age and sex.
4 Green band	The normal range on a scale.
5 Dot	Where the patient lies on that scale. A dot outside the band is outside the normal range.
6 Interpretation	A sentence explaining what the value means clinically, taken from the reference textbook.

Deviation marks follow the usual convention: * beyond the normal range, ** more than one further deviation, *** more than two.

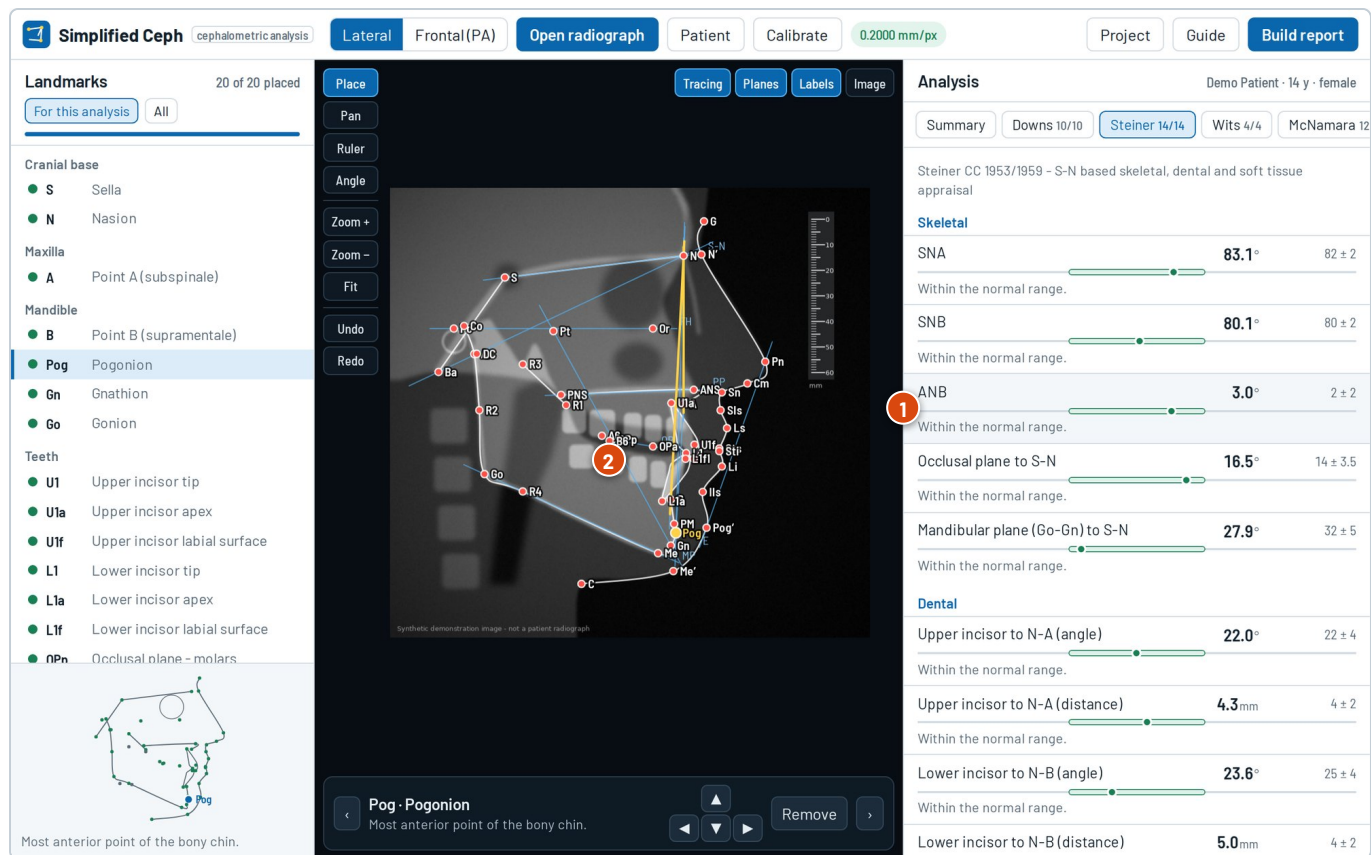


Figure 19. Click a row(1) and the tool draws how that measurement is constructed on the X-ray(2). If landmarks are still missing, the row tells you which ones. Click the row again to switch the drawing off.

13 The ten analyses

Each tab lists its source under the title. The table below lists every measurement the tool calculates.

ANALYSIS	BASED ON	MEASUREMENTS
Downs	Downs WB 1948 - FH based; control sample 12-17y, excellent occlusions	Skeletal pattern: Facial angle (FH to N-Pog), Angle of convexity (N-A-Pog), A-B plane to N-Pog, Mandibular plane angle (MP-FH), Y-(growth) axis (S-Gn to FH); Dental pattern: Cant of occlusal plane (to FH), Interincisal angle, Lower incisor to occlusal plane, Lower incisor to mandibular plane, Upper incisor to A-Pog
Steiner	Steiner CC 1953/1959 - S-N based skeletal, dental and soft tissue appraisal	Skeletal: SNA, SNB, ANB, Occlusal plane to S-N, Mandibular plane (Go-Gn) to S-N; Dental: Upper incisor to N-A (angle), Upper incisor to N-A (distance), Lower incisor to N-B (angle), Lower incisor to N-B (distance), Pogonion to N-B, Holdaway difference (L1-NB minus Pog-NB), Interincisal angle; Soft tissue (S-line): Upper lip to S-line, Lower lip to S-line
Wits	Jacobson A 1975 - AO-B0 on the functional occlusal plane	Jaw disharmony: Wits appraisal (AO-B0), ANB (for comparison), Go-Gn to S-N (ANB reliability check), A-B line to occlusal plane
McNamara	McNamara JA 1984 - nasion perpendicular, effective lengths, airway	Maxilla to cranial base: Nasolabial angle, Cant of upper lip (to N-perpendicular), Point A to nasion perpendicular; Maxilla to mandible: Effective midfacial length (Co-A), Effective mandibular length (Co-Gn), Maxillomandibular differential, Lower anterior facial height (ANS-Me), Mandibular plane angle (Go-Me to FH), Facial axis angle; Mandible to cranial base: Pogonion to nasion perpendicular; Dentition: Upper incisor to point A vertical, Lower incisor to A-Pog; Airway: Upper pharynx, Lower pharynx
Ricketts	Ricketts RM - lateral summary & comprehensive analysis (FH / PtV frame). Norms age 9, growth-adjusted where defined	Chin in space: Facial axis (Ba-N to Pt-Gn), Facial depth (FH to N-Pog), Mandibular plane to FH, Lower facial height (ANS-Xi-PM), Mandibular arc; Convexity and maxilla: Convexity (A to N-Pog), Maxillary depth (FH to N-A), Maxillary height (N-CF-A), Palatal plane to FH, Landes angle (Ba-N-A); Teeth: Lower incisor to A-Pog, Lower incisor inclination to A-Pog, Upper incisor to A-Pog, Upper incisor inclination to A-Pog, Upper molar to PtV, Interincisal angle, Incisor overjet (along OP), Incisor overbite (perpendicular to OP), Lower incisor extrusion (to OP), Molar relation (A6 to B6 along OP); Profile: Lower lip to E-line, Upper lip length (ANS to stomion), Lip embrasure to occlusal plane; Cranial structure and ramus: Cranial base angle (N-S-Ba), Ba-S-PNS, Cranial deflection (Ba-N to FH), Anterior cranial length (CC-N), Ramus height (CF-Go), Ramus Xi position (CF-Xi to FH), Porion location (Po to PtV)
Tweed-Merrifield	Tweed diagnostic facial triangle and Merrifield differential diagnostic analysis	Diagnostic facial triangle: FMA, FMIA, IMPA; Anteroposterior: SNA, SNB, ANB, AO-B0; Vertical: Occlusal plane to FH, Posterior facial height (Ar-Go), Anterior facial height (Me to palatal plane), Facial height index (PFH / AFH); Soft tissue: Z-angle, Upper lip thickness, Total chin thickness (Pog' to N-B), Total chin minus upper lip thickness
Soft tissue profile	Jacobson & Vlachos - profile evaluation (proportions, nose, lips, chin)	Vertical proportions: Middle : lower third (G-Sn / Sn-Me'), Upper lip : lower lip height (Sn-Sts / Sti-Me'), Upper incisor exposure at rest; Nose and chin-neck: Nasofacial angle, Nasomental angle, Nasolabial angle, Mentocervical angle; Maxillary and mandibular prognathism: Subnasale to glabella perpendicular, Pog' to glabella perpendicular, Pog' to 0-degree meridian (N' perpendicular), Soft tissue facial convexity (G-Sn-Pog'); Lip prominence: Upper lip to Sn-Pog' , Lower lip to Sn-Pog' , Upper lip to subnasale vertical, Lower lip to subnasale vertical, Chin to subnasale vertical, Upper lip to E-line, Lower lip to E-line, Merrifield Z-angle
Holdaway	Holdaway RA 1983 - soft tissue analysis on the H-line (Pog' -Ls)	Soft tissue balance: Soft tissue facial angle (FH to N' -Pog'), Upper lip curvature, Skeletal convexity at point A, H-line angle, Nose prominence (Pn to H-line), Upper sulcus depth (to H-line), Upper lip thickness (near base), Upper lip strain measurement (vermilion to incisor), Lip strain factor (thickness minus vermilion thickness), Lower lip to H-line, Lower sulcus depth (to H-line), Soft tissue chin thickness (Pog-Pog')
Proportions & divergence	Sadowsky - geometry of cephalometry: facial heights and plane divergence	Facial heights: Upper anterior facial height (N-ANS) % of AFH, Lower anterior facial height (ANS-Me) % of AFH, Posterior / anterior facial height (S-Go / N-Me); Plane divergence: Palatal plane to S-N, Occlusal plane to S-N, Mandibular plane (Go-Me) to S-N, Occlusomandibular (OM) angle, Palatal plane to mandibular plane

ANALYSIS	BASED ON	MEASUREMENTS
Ricketts frontal Frontal view	Ricketts / Rocky Mountain frontal analysis. Norms age 9, growth-adjusted	Skeletal widths: Facial width (ZA-AZ), Nasal width, Nasal height (ZL-ZR plane to ANS), Maxillary width (JR-JL), Mandibular width (AG-GA), Maxillomandibular width - right (JR to ZR-AG), Maxillomandibular width - left (JL to ZL-GA), Transverse differential index (actual - expected AG-GA minus J-J); Dental: Intermolar width (B6-B6), Inter canine width (B3-B3), Molar relation right (A6-B6), Molar relation left (A6-B6), Lower molar to J-AG plane (mean of sides), Denture midline (upper to lower), Denture to jaw midline, Occlusal plane tilt; Symmetry: Maxillomandibular midline (ANS-Me to ZA-AZ perpendicular), Postural symmetry (ZR-AG-ZA minus ZL-GA-AZ), Menton deviation from Cr-ANS midline, Jugale distance to midline: right minus left, Antegonion distance to midline: right minus left, Antegonion height: right minus left, Maxillary width : bizygomatic width

14 The frontal (PA) view

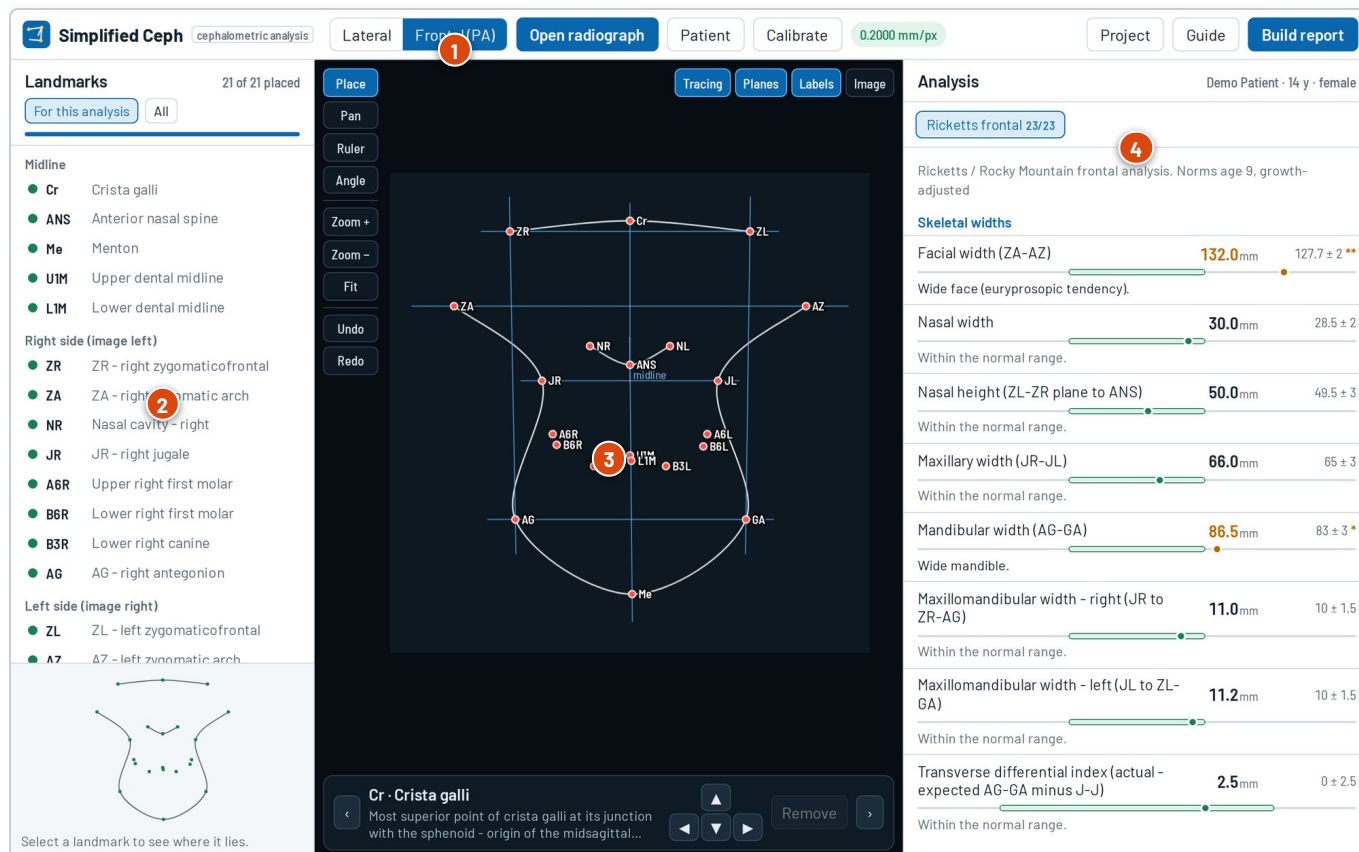


Figure 20. The Frontal (PA) view with the sample tracing.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Frontal (PA)	Switches the whole screen to the front X-ray. Press Lateral to go back; nothing is lost.
2 Frontal landmarks	21 points in three groups: Midline, Right side and Left side. Remember that the patient's right side appears on the left of the image.
3 Viewer	Open the front X-ray with Open radiograph while this view is selected, then calibrate it separately.
4 Ricketts frontal	The analysis for this view: skeletal widths, dental relations and symmetry.

15 Building the report

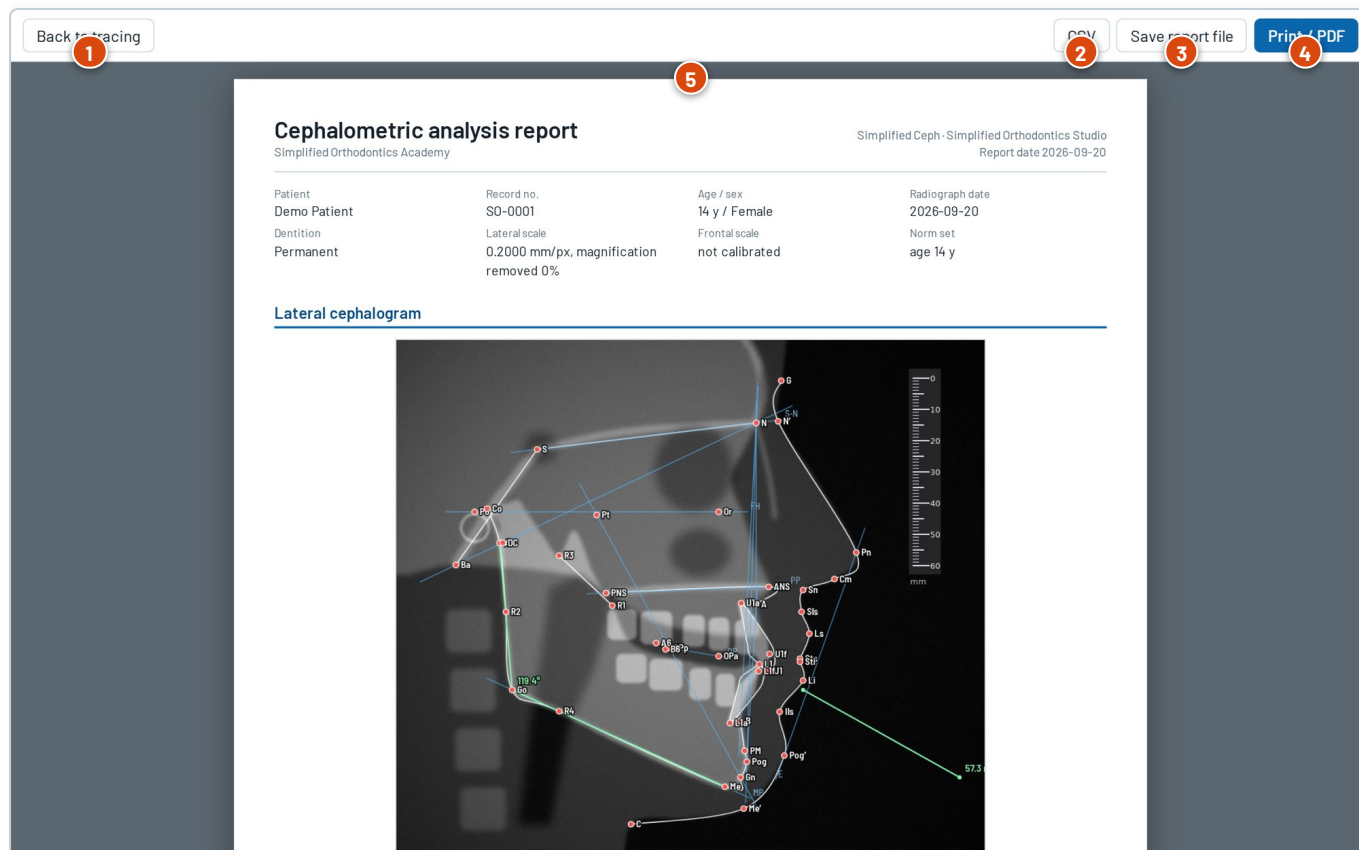


Figure 21. The report opens over the screen.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Back to tracing	Closes the report and returns to the X-ray.
2 CSV	Downloads all measurements as a table for Excel.
3 Save report file	Downloads the report as a single web page file that opens in any browser.
4 Print / PDF	Opens the print window. Choose your printer, or choose "Save as PDF" as the destination to get a PDF file.
5 Report page	Patient details, scales and the norm set used, then the traced X-ray.

The report contains, in order: patient and record details; the traced radiograph; the **diagnostic summary**; a **cephalometric problem list** (only the findings); one table per analysis with Measurement, Value, Norm, Dev. (distance from the norm in standard deviations), Deviation marks and Interpretation; your clinical notes; signature lines for clinician and date; and a note on the sources of the norms.

Normally positioned mandible

SNB 80.1° · Pog to N-perp -3.0mm · Facial angle 88.4° · Co-Gn for Co-A 118.1mm

Maxillary incisors (4 of 5 indicators)**Well positioned**

UI-NA° 22.0° · UI-NA mm 4.3mm · UI to A-Pog 5.3mm · UI to A vertical 4.3mm · UI to A-Pog° 25.4°

Incisor relationship (3 of 3 indicators)**Normal incisor relationship**

Overjet 3.3mm · Overbite 1.7mm · Interincisal 131.5°

Soft tissue chin (2 of 3 indicators)**Balanced chin with a prominent chin tendency**

Pog' to G-perp 1.0mm · O° meridian 2.0mm · Soft tissue facial angle 91.1°

Normodivergent pattern

FMA 24.5° · GoGn-SN 219° · Y-axis 58.2° · Facial axis 83.3° · Lower facial height 44.9° · FHI 0.74 · S-Go/N-Me 66.2% · OM angle 14.9° · LAFH 65.5mm

Mandibular incisors (4 of 6 indicators)**Well positioned with a proclined / protrusive tendency**

IMPA 92.1° · LI-NB° 23.6° · LI-NB mm 5.0mm · LI to A-Pog 2.1mm · LI to OP 14.7° · FMA 63.4°

Lips (7 of 7 indicators)**Balanced lips**

Ls to E -5.5mm · Li to E -2.3mm · Ls to S -1.5mm · Li to S 0.1mm · Li to H 1.1mm · Z-angle 76.0° · Nasolabial 101.2°

Cephalometric problem list

- **Mandibular incisors:** Well positioned with a proclined / protrusive tendency
- **Soft tissue chin:** Balanced chin with a prominent chin tendency

Downs analysis

Downs WB 1948 - FH based; control sample 12-17 y, excellent occlusions

Measurement	Value	Norm	Dev.	Deviation	Interpretation
Skeletal pattern					
Facial angle (FH to N-Pog)	88.4 °	87.8 ± 3.6	+0.2		Within the normal range.
Angle of convexity (N-A-Pog)	3.4 °	0 ± 5.1	+0.7		Within the normal range.
A-B plane to N-Pog	-6.0 °	-4.6 ± 3.7	-0.4		Within the normal range.
Mandibular plane angle (MP-FH)	24.5 °	21.9 ± 3.2	+0.8		Within the normal range.
Y(growth) axis (S-Gn to FH)	58.2 °	59.4 ± 3.8	-0.3		Within the normal range.
Dental pattern					
Cant of occlusal plane (to FH)	11.9 °	9.3 ± 3.8	+0.7		Within the normal range.
Interincisal angle	131.5 °	135.4 ± 5.8	-0.7		Within the normal range.
Lower incisor to occlusal plane	14.7 °	14.5 ± 3.5	+0.1		Within the normal range.
Lower incisor to mandibular plane	2.1 °	1.4 ± 3.8	+0.2		Within the normal range.
Upper incisor to A-Pog	5.3 mm	2.7 ± 1.8	+1.4 *		Maxillary dental protrusion.

Steiner analysis

Steiner CC 1953/1959 - S-N based skeletal, dental and soft tissue appraisal

Figure 22. Further down the report: the diagnostic summary and the analysis tables.

16 The Project menu: saving and reopening a case

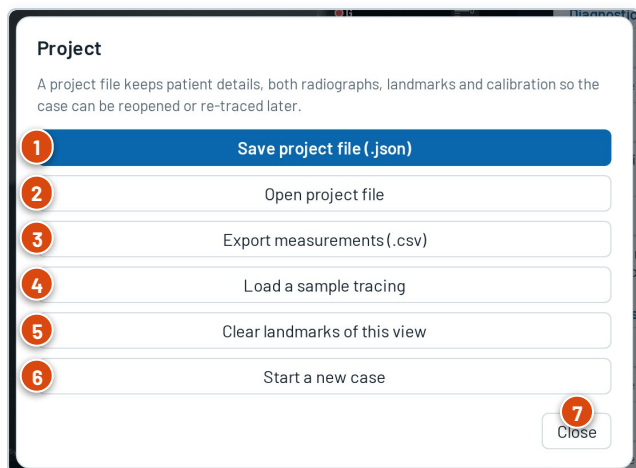


Figure 23. The Project window.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Save project file (.json)	Downloads one file with patient details, both X-rays, all landmarks and calibration. Keep it in the patient folder.
2 Open project file	Reopens a saved case exactly as you left it.
3 Export measurements (.csv)	Downloads every measurement as a table for Excel or for research.
4 Load a sample tracing	Loads practice landmarks into the current view.
5 Clear landmarks of this view	Deletes all points of the lateral or frontal view that is open. The picture stays.
6 Start a new case	Empties everything for the next patient.
7 Close	Closes the window.

IMPORTANT

Closing or refreshing the page removes the X-ray and the landmarks from the screen. Always press **Project** → **Save project file (.json)** before you leave a case you want to keep.

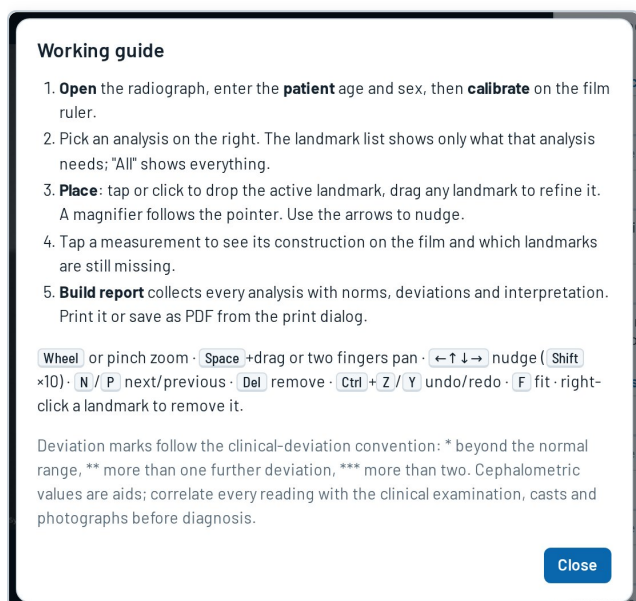


Figure 24. The built-in Guide.

NAME	WHAT IT DOES AND HOW TO USE IT
1 Guide	A one-page reminder of the workflow, the shortcuts and the meaning of the deviation stars. Open it with the Guide button.

17 Using Simplified Ceph on a phone

On a narrow screen the three areas become three tabs at the bottom. The X-ray fills the screen, and the two side panels slide up as sheets.

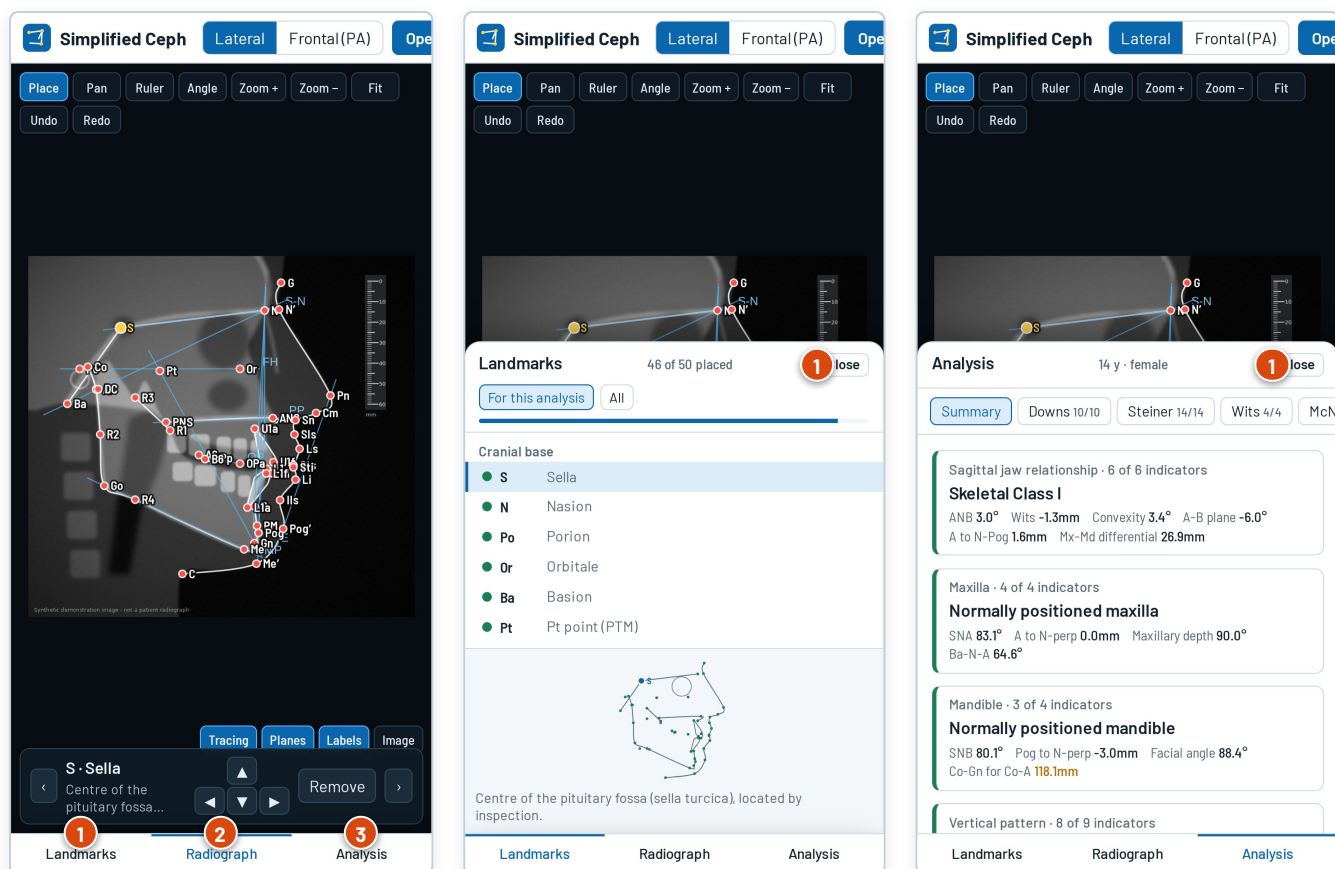


Figure 25. Phone layout. Left: the X-ray with 1 Landmarks, 2 Radiograph and 3 Analysis tabs. Middle: the Landmarks sheet. Right: the Analysis sheet. Each sheet has a Close button (1).

- Tap to place a point. Drag a point to move it. Use the arrow buttons for fine moves.
- Pinch with two fingers to zoom; drag with two fingers to move the picture.
- The top bar scrolls sideways to reach Patient, Calibrate, Project, Guide and Build report.

18 Keyboard and mouse shortcuts

ACTION	SHORTCUT
Zoom	Mouse wheel, or pinch
Move the picture	Space + drag, or two fingers
Place tool	V
Fit picture to window	F
Zoom in / out	+ / -
Nudge active landmark	Arrow keys (Shift = ten times further)
Next / previous landmark	N / P
Remove active landmark	Del , or right-click the point

ACTION**SHORTCUT****Undo / redo****Ctrl + Z / Ctrl + Y**

19 All landmarks and where to click

Lateral view

CODE	NAME	WHERE TO CLICK
S	Sella	Centre of the pituitary fossa (sella turcica).
N	Nasion	Most anterior point of the frontonasal suture.
Po	Porion	Highest point of the external ear canal (anatomic porion, not the ear-rod).
Or	Orbitale	Lowest point of the lower orbital rim. With two shadows, mark the midpoint.
Ba	Basion	Lowest, most posterior point on the front margin of foramen magnum.
Pt	Pt point (PTM)	Upper back point of the pterygomaxillary teardrop, at the lower border of foramen rotundum.
Ar	Articulare	Where the back edge of the ramus crosses the outline of the cranial base.
Co	Condylion	Highest, most posterior point of the condyle head.
ANS	Anterior nasal spine	Tip of the anterior nasal spine.
PNS	Posterior nasal spine	Tip of the posterior nasal spine.
A	Point A (subspinale)	Deepest point of the maxillary curve between ANS and the upper alveolus.
B	Point B (supramentale)	Deepest point on the front of the mandibular symphysis.
PM	Protuberance menti	Where the chin outline changes from concave to convex, above pogonion.
Pog	Pogonion	Most anterior point of the bony chin.
Gn	Gnathion	Most anterior-inferior point of the chin, between Pog and Me.
Me	Menton	Lowest point of the symphysis.
Go	Gonion	Point on the jaw angle midway between the ramus and body tangents.
R1-R4	Ramus points	R1 deepest point of the front ramus border; R2 opposite it on the back border; R3 lowest point of the sigmoid notch; R4 on the lower border directly below R3. Together they locate the Xi point.
DC	DC point	Centre of the condyle neck on the Ba-N line.
U1, U1a, U1f	Upper incisor	Tip, root apex, and most labial crown point (optional).
L1, L1a, L1f	Lower incisor	Tip, root apex, and most labial crown point (optional).
OPp, OPa	Occlusal plane	Midpoint of first-molar cusp overlap, and of first-premolar cusp overlap.
A6, B6	First molars	Most distal crown point of the upper and the lower first molar.
G	Glabella	Most prominent point of the forehead.
N'	Soft tissue nasion	Deepest point between forehead and nose.
Pn	Pronasale	Tip of the nose.
Cm	Columella point	Most anterior point of the columella.
Sn	Subnasale	Where the columella meets the upper lip.
SlS	Superior labial sulcus	Deepest point of the upper lip.
Ls	Labrale superius	Most anterior point of the upper lip.
Sts / Sti	Stomion	Lowest point of the upper lip / highest point of the lower lip.
Li	Labrale inferius	Most anterior point of the lower lip.
IlS	Inferior labial sulcus	Deepest point between lower lip and chin.
Pog'	Soft tissue pogonion	Most prominent point of the soft chin.
Me'	Soft tissue menton	Lowest point of the soft chin.
C	Cervical point	Innermost point between the chin underside and the neck.
UP1, UP2	Upper pharynx	Soft palate point nearest the back wall, and the nearest point on the back wall.

CODE	NAME	WHERE TO CLICK
LP1, LP2	Lower pharynx	Where the tongue crosses the lower mandibular border, and the nearest point on the back wall.

Frontal view

CODE	NAME	WHERE TO CLICK
Cr	Crista galli	Top of crista galli; start of the midline reference.
ANS	Anterior nasal spine	Tip, below the nasal cavity.
Me	Menton	Lowest point of the symphysis.
U1M / L1M	Dental midlines	Contact between the upper / lower central incisors.
ZR / ZL	Zygomaticofrontal	Inner edge of the right / left zygomaticofrontal suture.
ZA / AZ	Zygomatic arch	Centre (most lateral point) of the right / left arch.
NR / NL	Nasal cavity	Widest point of the right / left nasal wall.
JR / JL	Jugale	Crossing of the tuberosity outline and the zygomatic buttress, right / left.
A6R / A6L	Upper first molars	Most buccal crown point, right / left.
B6R / B6L	Lower first molars	Most buccal crown point, right / left.
B3R / B3L	Lower canines	Cusp tip, right / left.
AG / GA	Antegonion	Deepest point of the right / left antegonial notch.

20 Glossary of abbreviations

TERM	PLAIN MEANING
S-N	Line from Sella to Nasion: the front cranial base. Reference for SNA, SNB and many angles.
FH	Frankfort horizontal: line from Porion to Orbitale.
PP	Palatal plane: ANS to PNS.
OP	Occlusal plane: the line along which the teeth meet.
MP	Mandibular plane: lower border of the mandible (Go-Me or Go-Gn).
SNA / SNB	Angles that show how far forward the upper jaw (A) and lower jaw (B) sit relative to the cranial base.
ANB	SNA minus SNB: the front-back relation of the jaws. Larger = Class II tendency, negative = Class III tendency.
Wits (AO-B0)	Distance between points A and B projected on the occlusal plane; another jaw-relation check that is not affected by nasion.
Class I / II / III	Normal jaw relation / lower jaw behind / lower jaw ahead.
FMA	Frankfort-mandibular plane angle: steepness of the mandible.
IMPA	Lower incisor to mandibular plane angle.
FMIA	Frankfort to lower incisor angle. FMA, IMPA and FMIA form the Tweed triangle.
U1 / L1	Upper / lower central incisor.
N-perp	A vertical line dropped from nasion, perpendicular to FH (McNamara).
Co-A / Co-Gn	Effective midface length / effective mandibular length (McNamara).
LAFH	Lower anterior facial height: ANS to Menton.
AFH / PFH, FHI	Anterior / posterior facial height and their ratio, the facial height index.
Normo-, hypo-, hyperdivergent	Average, flat (short face) or steep (long face) vertical pattern.
E-line	Ricketts aesthetic line from nose tip to soft chin.
S-line	Steiner line from the middle of the nose S-curve to the soft chin.
H-line	Holdaway line from soft chin to upper lip.
Z-angle	Merrifield angle between FH and the profile line.
PtV	Pterygoid vertical: a vertical line through the Pt point (Ricketts).
Xi	Geometric centre of the ramus, built from R1-R4.
CC / CF	Centre of cranium (Ba-N crossing Pt-Gn) / centre of face (FH crossing PtV).
Overjet / overbite	Horizontal / vertical overlap of the incisors.
Interincisal angle	Angle between the long axes of upper and lower incisors.
Nasolabial angle	Angle between the base of the nose and the upper lip.
Dev.	Distance from the norm, counted in standard deviations.

21 Problems and answers

WHAT YOU SEE	WHAT TO DO
"Choose an image file (JPG, PNG, BMP, WebP). Export DICOM images first."	The file is not a picture. Export the X-ray as JPG or PNG from the X-ray software and open that file.
Distances look far too big or too small	Calibrate again on the ruler, using two marks far apart, and check the millimetres you typed.

WHAT YOU SEE	WHAT TO DO
A measurement shows no value	Some of its landmarks are missing. Click the row; it lists them. Or switch the list to All .
Convexity or lip values have the wrong sign	Open Image and set Profile faces to the side the face looks toward.
I placed a point in the wrong spot	Drag it, nudge it with the arrows, or press Undo .
The case is gone after reopening the page	Only the patient details are remembered. Reopen your saved project file with Project → Open project file .

NOTE

Cephalometric values are diagnostic aids. Always weigh them together with the clinical examination, study models and photographs. Landmark identification carries an inherent error of about 1-2 mm. The screenshots in this manual use a synthetic demonstration image, not a patient X-ray.