MATHEMATICS · YEAR 7

Estimating Square Roots of Non-Perfect Squares

Name _____ **Date** _____

> **Remember:** if $a^2 < n < b^2$, then $a < \sqrt{n} < b$. For a closer estimate, test tenths and square them.

1 Bracket and round

Fill in the nearby perfect squares, then estimate each square root to the nearest whole number.

Number, n	Nearby perfect squares	$\sqrt{n}$ lies between	Nearest whole number
13	___² < 13 < ___²	___ and ___	√13 ≈ _____
24	___² < 24 < ___²	___ and ___	√24 ≈ _____
39	___² < 39 < ___²	___ and ___	√39 ≈ _____
67	___² < 67 < ___²	___ and ___	√67 ≈ _____
115	___² < 115 < ___²	___ and ___	√115 ≈ _____

2 Estimate to the nearest tenth

Find the tenths whose squares sit either side of the number. Then choose your estimate.

√8 — TEST TENTHS

___² = _____ < 8

8 < _____ = ___²

√8 ≈ _____ (1 d.p.)

√18 — TEST TENTHS

___² = _____ < 18

18 < _____ = ___²

√18 ≈ _____ (1 d.p.)

√30 — TEST TENTHS

___² = _____ < 30

30 < _____ = ___²

√30 ≈ _____ (1 d.p.)

√65 — TEST TENTHS

___² = _____ < 65

65 < _____ = ___²

√65 ≈ _____ (1 d.p.)

3 Square-area challenge

A square play area has an area of 52 m². Estimate the length of one side to the nearest tenth of a metre. Show the two tenths you tested.

_____

_____