

 **Normal Distribution**

Chapter: Probability · Level ★★ · Time: 30 min

SCORE

___ / 20

Name _____ Class _____ Date _____

AFTER THIS WORKSHEET YOU CAN

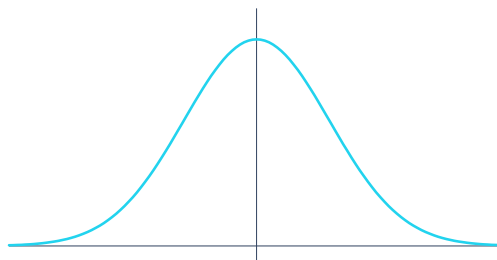
- ✓ Compute a z-score.
- ✓ Apply the empirical rule (68–95–99.7).
- ✓ Find x from a given z-score.
- ✓ Recognise the bell-shaped curve.

**Section A · Concept Check**

• BEGINNER

$4 \times 1 = 4$

- The z-score for $x = 95$ if mean = 85 and SD = 5:
☐ A. 2 ☐ B. -2 ☐ C. 10 ☐ D. 1
- The z-score for $x = 70$ if mean = 85 and SD = 5:
☐ A. -3 ☐ B. 3 ☐ C. -15 ☐ D. -1
- By the Empirical Rule, the % within 3 SD of the mean is about:
☐ A. 99.7% ☐ B. 95% ☐ C. 68% ☐ D. 100%
- If mean = 200, SD = 25 and $z = -1.5$, then $x =$:
☐ A. 162.5 ☐ B. 237.5 ☐ C. 175 ☐ D. 150



The normal curve: 68–95–99.7 within 1–2–3 SD

**Section B · Problem Solving**

• INTERMEDIATE

$2 + 3 \times 3 = 11$

- A z-score = $(x - \text{mean}) /$ _____
- The z-score for $x = 95$, mean 85, SD 5 is _____
- Find the z-score for $x = 95$ if mean = 85 and SD = 5.

- Find the z-score for $x = 70$ if mean = 85 and SD = 5.

- By the Empirical Rule, what % of values fall within 3 SD of the mean?

**Section C · Challenge**

• CHALLENGE

5

- If mean = 200, SD = 25 and $z = -1.5$, find x.

 Reflection — the most useful thing I learned: _____

A ___/4 B ___/11 C ___/5 **Total ___/20**

Teacher's Signature

Parent's Signature

⌘ ANSWER KEY — FOLD OR CUT BEFORE HANDING OUT

1-A 2-A 3-A 4-A | 5 SD 6 2 7 = 2 8 = -3 9 = About 99.7% | 10 = 162.5