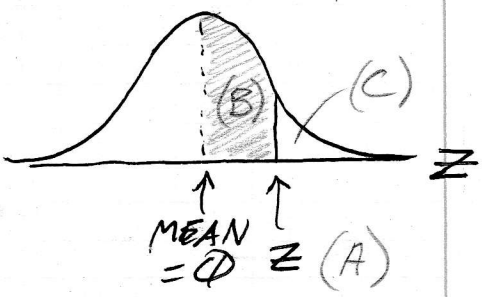
4-7

Z-TABLE

(A) Z	(B) AREA BETWEEN MEAN AND Z (TOWARD HUMP)	(C) AREA BEYOND Z (TOWARD TAIL)
0.00	0.000	0.5000
0.01	~~0.000~~ 0.0040	0.4960
0.02	0.0080	0.4920
⋮	⋮	⋮
1.30	0.4032	0.0968
⋮	⋮	⋮
4.00	0.49997	0.00003



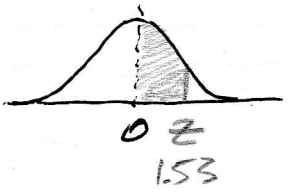
'AREA' MEAN FRACTION (OR %)

← (B) AND (C) ADD TO 0.5000 FOR EACH ROW

OUR FIRST QUESTION WILL BE OF THE FORM:

GIVEN: Z = ___ , FIND: FRACTION OF AREA ABOVE OR BELOW Z

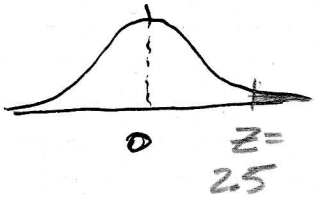
EXAMPLE: Z = 1.53 FIND AREA BETWEEN Z AND MEAN



THIS CAN BE FOUND DIRECTLY FROM (B)

AREA IS 0.4370 (43.70%)

EXAMPLE: Z = 2.5 FIND AREA ABOVE Z



THIS CAN BE FOUND DIRECTLY FROM (C)

AREA IS 0.0062 (0.62%)

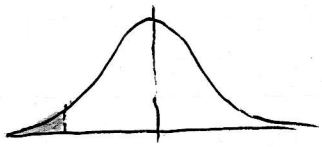
EXAMPLE: $Z = -1.53$ FIND AREA BETWEEN Z AND MEAN

$= -1.53$

LOOK UP $Z = |-1.53| = 1.53$

AREA IS IN COLUMN (B) = 0.4370 (43.70%)

EXAMPLE: $Z = -2.5$ FIND AREA BELOW Z



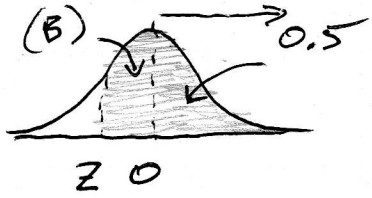
$= -2.5$

LOOK UP $Z = 2.5$

AREA IS IN COLUMN (C) = 0.0062 (0.62%)

(TO THE RIGHT)

EXAMPLE: $Z = -1.0$ FIND AREA ABOVE Z



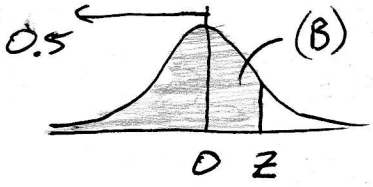
$= -1.0$

(TABLE) (FROM 0 ON)

AREA IS (B) + 0.5

0.3413 + 0.5 = 0.8413 (OR 84.13%)

EXAMPLE: $Z = 1.30$ FIND AREA BELOW Z



AREA IS (B) + 0.5

0.4032 + 0.5 = 0.9032 (OR 90.32%)

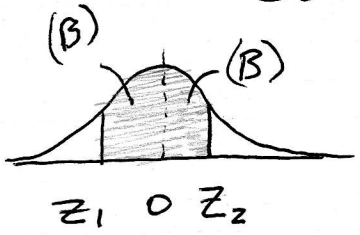
ANOTHER QUESTION IS OF THE FORM:

GIVEN $Z_1 =$ ___ FIND THE AREA BETWEEN Z_1 AND Z_2

$Z_2 =$ ___

EXAMPLE: $Z_1 = -1.30$

$Z_2 = +1.00$



AREA IS FROM Z_1 TO 0 (B)

\+ FROM 0 TO Z_2 (B)

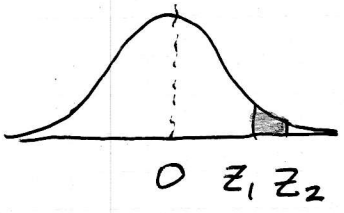
Z_1 (B) = 0.4032

Z_2 (B) = +0.3413

0.7445 (OR 74.45%)

EXAMPLE: $Z_1 = 2.00$ FIND AREA BETWEEN Z_1 AND Z_2

$Z_2 = 2.50$



AREA IS FROM Z_2 TO 0 (B)

\- FROM Z_1 TO 0 (B)

Z_2 (B) 0.4938

$-Z_1$ (B) -0.4772

0.0166 (OR 1.66%)

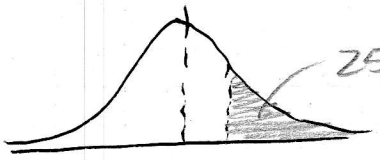
OPPOSITE SIGNS: ADD (B)s

SAME SIGNS: SUBTRACT (B)s

ANOTHER FORM OF A QUESTION: (REVERSE LOOKUP)

GIVEN AN AREA, FIND Z

EXAMPLE: WHAT Z VALUE HAS 25% OF AREA ABOVE IT?



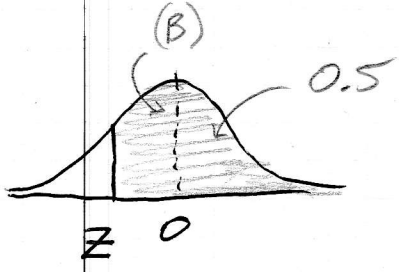
COLUMN (C)

LOOK UP IN (C) A VALUE OF 0.2500 (OR CLOSE TO IT)

(A)	(B)	(C)
0.67	—	0.2514

$Z = 0.67$

EXAMPLE: WHAT Z VALUE HAS 75% OF AREA ABOVE IT?



$$0.7500 - 0.5000 = 0.2500$$

LOOK UP 0.2500 IN (B)

(A)	(B)	(C)
0.67	0.2486	—

MY Z IS NEGATIVE, THOUGH,

$Z = -0.67$

TO CONVERT FROM REAL DATA: X

TO Z SCORES: μ

σ

USE $Z = \dfrac{X - \text{MEAN}}{\sigma}$

FROM EX. 16(a): $X = 800$, $\mu = 500$, $\sigma = 100$

$$Z = \frac{(800 - 500)}{100}$$

$$\boxed{Z = +3}$$