STANDARD NORMAL TABLE If z is a randomly selected value from a standard normal distribution, you can use the table below to find the probability that z is less than or equal to some given value. For example, the table shows that $P(z \le -0.4) = 0.3446$. You can find the value of $P(z \le -0.4)$ in the table by finding the value where row **−0** and column **.4** intersect.

READING

In the table, the value .0000+ means "slightly more than 0" and the value 1.0000− means "slightly less than 1."

Standard Normal Table

z	**.0**	**.1**	**.2**	**.3**	**.4**	**.5**	**.6**	**.7**	**.8**	**.9**
−3	.0013	.0010	.0007	.0005	.0003	.0002	.0002	.0001	.0001	.0000+
−2	.0228	.0179	.0139	.0107	.0082	.0062	.0047	.0035	.0026	.0019
−1	.1587	.1357	.1151	.0968	.0808	.0668	.0548	.0446	.0359	.0287
−0	.5000	.4602	.4207	.3821	.3446	.3085	.2743	.2420	.2119	.1841
0	.5000	.5398	.5793	.6179	.6554	.6915	.7257	.7580	.7881	.8159
1	.8413	.8643	.8849	.9032	.9192	.9332	.9452	.9554	.9641	.9713
2	.9772	.9821	.9861	.9893	.9918	.9938	.9953	.9965	.9974	.9981
3	.9987	.9990	.9993	.9995	.9997	.9998	.9998	.9999	.9999	1.0000−

You can also use the standard normal table to find probabilities for *any* normal distribution by first converting values from the distribution to z-scores.

EXAMPLE 3 Use a z-score and the standard normal table

BIOLOGY Scientists conducted aerial surveys of a seal sanctuary and recorded the number x of seals they observed during each survey. The numbers of seals observed were normally distributed with a mean of 73 seals and a standard deviation of 14.1 seals. Find the probability that at most 50 seals were observed during a survey.

Solution

STEP 1 **Find** the z-score corresponding to an x-value of 50.

$$z = \frac{x - \bar{x}}{\sigma} = \frac{50 - 73}{14.1} \approx -1.6$$

STEP 2 **Use** the table to find $P(x \le 50) \approx P(z \le -1.6)$.

The table shows that $P(z \le -1.6) = 0.0548$. So, the probability that at most 50 seals were observed during a survey is about 0.0548.

z	**.0**	**.1**	**.2**	**.3**	**.4**	**.5**	**.6**	**.7**	**.8**	**.9**
−3	.0013	.0010	.0007	.0005	.0003	.0002	.0002	.0001	.0001	.0000+
−2	.0228	.0179	.0139	.0107	.0082	.0062	.0047	.0035	.0026	.0019
−1	.1587	.1357	.1151	.0968	.0808	.0668	.0548	.0446	.0359	.0287
−0	.5000	.4602	.4207	.3821	.3446	.3085	.2743	.2420	.2119	.1841
0	.5000	.5398	.5793	.6179	.6554	.6915	.7257	.7580	.7881	.8159

✓ GUIDED PRACTICE for Example 3

8. **WHAT IF?** In Example 3, find the probability that at most 90 seals were observed during a survey.

9. **REASONING** *Explain* why it makes sense that $P(z \le 0) = 0.5$.