

Facilitator instructions: give students 5-10min to work through examples on page 2. Solutions are on this page, with intermediate steps on page 3 and a previous worked example on page 4 (decide whether to give pg. 3-4 to students).

L1 Loss (Solution)

$$| 4.54 | + | -3.22 | + | -0.16 | + | -0.33 | + | 0.18 | = 8.43$$

$$| 4.91 | + | -3.52 | + | -3.61 | + | 0.73 | + | -2.27 | = 15.04$$

$$| -0.12 | + | 0.52 | + | 0.13 | + | -0.09 | + | -5.60 | = 6.46$$

L2 Loss (Solution)

$$(4.54)^2 + (-3.22)^2 + (-0.16)^2 + (-0.33)^2 + (0.18)^2 = 31.1469$$

$$(4.91)^2 + (-3.52)^2 + (-3.61)^2 + (0.73)^2 + (-2.27)^2 = 55.2164$$

$$(-0.12)^2 + (0.52)^2 + (0.13)^2 + (-0.09)^2 + (-5.60)^2 = 31.6698$$

L1 and L2 Loss: Practice

true	5.20	1.22	0.80	-2.10	0.20
predicted	0.66	4.44	0.96	-1.77	0.02
true - predicted	4.54	-3.22	-0.16	-0.33	0.18

L1 Loss = ____

L2 Loss = ____

true	5.52	-3.10	10.80	2.77	-0.40
predicted	0.61	0.42	14.41	2.04	1.87
true - predicted	4.91	-3.52	-3.61	0.73	-2.27

L1 Loss = ____

L2 Loss = ____

true	1.80	4.60	1.91	-1.10	0.00
predicted	1.92	4.08	1.78	-1.01	5.60
true - predicted					

L1 Loss = ____

L2 Loss = ____

L1 Loss

$$| 4.54 | + | -3.22 | + | -0.16 | + | -0.33 | + | 0.18 | = \underline{\hspace{2cm}}$$

$$| 4.91 | + | -3.52 | + | -3.61 | + | 0.73 | + | -2.27 | = \underline{\hspace{2cm}}$$

$$| -0.12 | + | 0.52 | + | 0.13 | + | -0.09 | + | -5.60 | = \underline{\hspace{2cm}}$$

L2 Loss

$$(4.54)^2 + (-3.22)^2 + (-0.16)^2 + (-0.33)^2 + (0.18)^2 = \underline{\hspace{2cm}}$$

$$(4.91)^2 + (-3.52)^2 + (-3.61)^2 + (0.73)^2 + (-2.27)^2 = \underline{\hspace{2cm}}$$

$$(-0.12)^2 + (0.52)^2 + (0.13)^2 + (-0.09)^2 + (-5.60)^2 = \underline{\hspace{2cm}}$$

Example

true	1.50	-0.10	0.62	0.00	7.70
predicted	0.83	2.46	0.73	9.53	2.32
true - predicted	0.67	-2.56	-0.11	-9.53	5.38

L1 Loss

$$\begin{aligned}0.67 + -2.56 + -0.11 + -9.53 + 5.38 &= \underline{\hspace{2cm}} \\|0.67| + |-2.56| + |-0.11| + |-9.53| + |5.38| &= \underline{\hspace{2cm}} \\0.67 + 2.56 + 0.11 + 9.53 + 5.38 &= 18.25\end{aligned}$$

L2 Loss

$$\begin{aligned}0.67 + -2.56 + -0.11 + -9.53 + 5.38 &= \underline{\hspace{2cm}} \\(0.67)^2 + (-2.56)^2 + (-0.11)^2 + (-9.53)^2 + (5.38)^2 &= \underline{\hspace{2cm}} \\0.4489 + 6.5536 + 0.0121 + 90.8209 + 28.9444 &= 126.7799\end{aligned}$$