

2.10

Adapt' Practice (Greatest Possible % Error)

What is the greatest possible % error in finding the area of each rectangle to the nearest whole unit?

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31) 7 m by 8 m

$$\text{Actual} = l \cdot w = 7 \cdot 8 = 56 \text{ m}^2$$

$$\begin{aligned} \text{Min} &= l \cdot w = (7-.5)(8-.5) \\ &= (6.5)(7.5) \\ &= 48.75 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{Max} &= l \cdot w = (7+.5)(8+.5) \\ &= (7.5)(8.5) \\ &= 63.75 \text{ m}^2 \end{aligned}$$

$$\text{Greatest possible \% error} = \frac{\text{Max} - \text{Actual}}{\text{Actual}}$$

$$= \frac{63.75 - 56}{56}$$

$$= \frac{7.75}{56}$$

$$= 0.138$$

$$\approx 14\%$$

33) 24 ft by 22 ft

$$\text{Actual} = l \cdot w = 24(22) = 528 \text{ ft}^2$$

$$\begin{aligned} \text{Min} &= l \cdot w = (24-.5)(22-.5) \\ &= (23.5)(21.5) \\ &= 505.25 \text{ ft}^2 \end{aligned}$$

$$\begin{aligned} \text{Max} &= l \cdot w = (24+.5)(22+.5) \\ &= (24.5)(22.5) \\ &= 551.25 \text{ ft}^2 \end{aligned}$$

$$\text{Greatest possible \% error} = \frac{\text{Max} - \text{Actual}}{\text{Actual}}$$

$$= \frac{551.25 - 528}{528}$$

$$= \frac{23.25}{528}$$

$$= 0.044$$

$$\approx 4\%$$