MSTAR PRACTICE WORKSHEET

# Lesson 3-7: Ratio Reasoning: Convert Measurements Between Systems

Grade 6 Mathematics · Standard 6.AT.3

Name: _____ Date: _____

*These are MSTAR-style questions written for this curriculum to rehearse the format. They are not official Maryland assessment items. MSTAR — Maryland's new state test, first given in spring 2027 — uses the same kinds of questions you see here: selected response, select-all, two-part evidence questions, and written responses.*

## Part A — Skills Check

Warm up with the lesson's core skills — one best answer each.

**Question 1** SELECTED RESPONSE · 1 POINT

1 kilometer ≈ 0.6 mile. About how many miles is 5 kilometers?

(A) 3 miles

(B) 5.6 miles

(C) 8 miles

(D) 30 miles

**Question 2** SELECTED RESPONSE · 1 POINT

1 pound ≈ 0.45 kilogram. About how many kilograms is 10 pounds?

(A) 4.5 kg

(B) 10.45 kg

(C) 22 kg

(D) 45 kg

**Question 3** SELECTED RESPONSE · 1 POINT

Which pair of units comes from two DIFFERENT measurement systems?

(A) Inches and feet

(B) Cups and quarts

(C) Grams and kilograms

(D) Miles and kilometers

**Question 4** SELECTED RESPONSE · 1 POINT

A sign in Mexico gives a distance of 80 kilometers. Using 1 km ≈ 0.6 mi, about how far is that in miles?

(A) About 8 miles

(B) About 48 miles

(C) About 80 miles

(D) About 133 miles

**Question 5** SELECTED RESPONSE · 1 POINT

A dog weighs 31 pounds. Flea medicine comes in packages for 4–10 kg, 10–25 kg, and 25–40 kg. Which package is correct?

(A) The 4–10 kg package

(B) The 10–25 kg package

(C) The 25–40 kg package

(D) None — 31 is above every range

**Question 6** SELECTED RESPONSE · 1 POINT

1 inch ≈ 2.54 cm. About how many centimeters is 4 inches?

(A) 1.57 cm

(B) 6.54 cm

(C) 10.16 cm

(D) 254 cm

## Part B — Test-Format Questions

These match the state test's formats: two-part questions, select-all, and written responses.

**Question 7** TWO-PART QUESTION

### Part A

A backpack weighs 5 kilograms. Using 1 kilogram ≈ 2.2 pounds, about how much does it weigh in pounds?

*Fill in the bubble next to the one best answer.*

- (A) 2.27 pounds
- (B) 7.2 pounds
- (C) 10 pounds
- (D) 11 pounds

### Part B

*Answer Part A before Part B — Part B asks about your reasoning.*

Why is the symbol ≈ used in the conversion 1 kilogram ≈ 2.2 pounds?

- (A) The symbol means the units are unrelated.
- (B) Pounds and kilograms measure different quantities.
- (C) The conversion between these systems is approximate, not exact.
- (D) The conversion only works for small numbers.

**Question 8** SELECT ALL THAT APPLY

Select ALL statements that are true about converting measurements between systems:

*Mark the box next to EVERY answer that is true. More than one is correct.*

- [A] A conversion ratio connects a unit in one system to a unit in another.
- [B] Converting to a smaller unit produces a larger number.
- [C] Between-system conversions are often approximate.
- [D] The two measurements describe different physical amounts after converting.
- [E] A ratio table can organize a between-system conversion.

### Part C — Show Your Thinking

Answer in writing, the way the state test's constructed responses work.

**Question 9** WRITTEN RESPONSE · 2 POINTS

The Golden Gate Bridge can hold about 35,924,000 pounds. An average midsize car weighs about 1,524 kilograms. Using 1 kilogram ≈ 2.2 pounds, about how many midsize cars could be on the bridge at one time? Explain each step, and say why your answer is an estimate.

*Write your answer in complete sentences. Show or explain your mathematical thinking.*

When you finish, check your reasoning with your teacher or family. Your teacher has the scoring guide for the written responses.