GRADE 7 ACCELERATED · UNIT 5 · LESSONS 6–7

Converting Length Across Systems; Currency

MA.7.AR.3.3

I can convert a length between the customary and metric systems with a ratio from the reference sheet, and convert money with a given rate.

Warm-Up

1. At $\frac{1}{4}$ in : 1 ft, how long is a 10-ft wall on the plan?
2. A 14 cm side becomes 7 cm in the copy. Find the scale factor.
3. Find the quotient: $4.5 \div 0.9$
4. 12 in $= 1$ ft. How many feet is 30 in?

Warm-Up

1. At $\frac{1}{4}$ in : 1 ft, how long is a 10-ft wall on the plan? **2.5 in**
2. A 14 cm side becomes 7 cm in the copy. Find the scale factor.

   k = ½
3. Find the quotient: $4.5 \div 0.9$ **5**
4. $12\text{ in} = 1\text{ ft}$. How many feet is 30 in? **2.5 ft**

Vocabulary

customary

the inch–foot–mile–pound–gallon system

metric

the centimeter–meter–kilometer–kilogram–liter system

conversion ratio

a pair of equal measures, such as $1\text{ in} = 2.54\text{ cm}$, written as a fraction that equals 1

exchange rate

how much of one currency one unit of another buys — a rate someone sets, printed on the problem

Notes

I. A conversion ratio is a form of 1

$$10 \text{ in} \times \frac{2.54 \text{ cm}}{1 \text{ in}} = 25.4 \text{ cm}$$

Notes

II. Which ratio? Estimate first

$$50 \text{ cm} \times \frac{0.39 \text{ in}}{1 \text{ cm}} = 19.5 \text{ in}$$

Pick the ratio whose 1 is the unit you have. Estimate: which is the bigger unit?

Notes

III. Money is a rate someone sets

$$1 \text{ dollar} = 0.92 \text{ euros}$$

$$150 \times 0.92 = 138 \text{ euros} \qquad 92 \div 0.92 = 100$$

Example 1

1 in = 2.54 cm. A tablet screen is 15 in across.

How many centimeters is that?

Example 1

$$15 \times 2.54 = 38.1$$

Answer: 38.1 cm

Your Turn

1 in = 2.54 cm. A monitor is 25 in across.

How many centimeters is that?

Your Turn

1 in = 2.54 cm. A monitor is 25 in across.

How many centimeters is that?

$$25 \times 2.54 = 63.5$$

Answer: 63.5 cm

Example 2

Today's rate: 1 US dollar = 0.92 euros.

How many euros is $80? And how many dollars is 46 euros?

Example 2

$80 \times 0.92 = 73.60$

$46 \div 0.92 = 50$

Answer: 73.60 euros; $50

Your Turn

Today's rate: 1 US dollar = 1.35 Canadian dollars (CAD).

$120 in CAD? And 81 CAD in US dollars?

Your Turn

Today's rate: 1 US dollar = 1.35 Canadian dollars (CAD).

$120 in CAD? And 81 CAD in US dollars?

$$120 \times 1.35 = 162$$

$$81 \div 1.35 = 60$$

Answer: 162 CAD; $60

Whiteboards · Question 1 of 9

1 in = 2.54 cm. A ruler is 20 in long.

How many centimeters is that?

Answer it.

Whiteboards · Question 1 of 9

1 in = 2.54 cm. A ruler is 20 in long.

How many centimeters is that?

$$20 \times 2.54 = 50.8$$

Answer: 50.8 cm

Whiteboards · Question 2 of 9

1 cm = 0.39 in. A phone is 20 cm long.

How many inches is that?

Answer it.

Whiteboards · Question 2 of 9

1 cm = 0.39 in. A phone is 20 cm long.

How many inches is that?

$$20 \times 0.39 = 7.8$$

Answer: 7.8 in

Whiteboards · Question 3 of 9

1 mi = 1.61 km. A race is 5 mi long.

How many kilometers is that?

Answer it.

Whiteboards · Question 3 of 9

1 mi = 1.61 km. A race is 5 mi long.

How many kilometers is that?

$$5 \times 1.61 = 8.05$$

Answer: 8.05 km

Whiteboards · Question 4 of 9

1 km = 0.62 mi. A trail is 5 km long.

How many miles is that?

A. 5.62 mi

B. 0.31 mi

C. 8.05 mi

D. 3.1 mi

Answer it.

Whiteboards · Question 4 of 9

1 km = 0.62 mi. A trail is 5 km long.

How many miles is that?

$$5 \times 0.62 = 3.1$$

Answer: D — 3.1 mi

Whiteboards · Question 5 of 9

$1\text{ ft} = 12\text{ in}$ and $1\text{ in} = 2.54\text{ cm}$.

A door is 6 ft tall.

How many centimeters is that?

Answer it.

Whiteboards · Question 5 of 9

$1\text{ ft} = 12\text{ in}$ and $1\text{ in} = 2.54\text{ cm}$.

A door is 6 ft tall.

How many centimeters is that?

$$6 \times 12 = 72\text{ in}$$

$$72 \times 2.54 = 182.88$$

Answer: 182.88 cm

Whiteboards · Question 6 of 9

$1\text{ yd} = 3\text{ ft}$, $1\text{ ft} = 12\text{ in}$, $1\text{ in} = 2.54\text{ cm}$.

A table is 3 yd long.

About how many centimeters is that? Estimate, then compute.

Answer it.

Whiteboards · Question 6 of 9

$1\text{ yd} = 3\text{ ft}$, $1\text{ ft} = 12\text{ in}$, $1\text{ in} = 2.54\text{ cm}$.

A table is 3 yd long.

About how many centimeters is that? Estimate, then compute.

Estimate: 3 yd is a bit under 3 m, so about 270 cm

$3 \times 3 \times 12 = 108$ in $108 \times 2.54 = 274.32$

Answer: About 270; exactly 274.32 cm

Whiteboards · Question 7 of 9

Rate on Nov 2: $1 = 1.32 CAD;

1 CAD = 16.2 pesos.

Theo changes $200 to CAD, then to pesos.

How many pesos does he get?

Answer it.

Whiteboards · Question 7 of 9

Rate on Nov 2: $1 = 1.32 CAD;

1 CAD = 16.2 pesos.

Theo changes $200 to CAD, then to pesos.

How many pesos does he get?

$200 \times 1.32 = 264$ $264 \times 16.2 = 4{,}276.80$

Answer: 4,276.80 pesos

Whiteboards · Question 8 of 9

$1\text{ km} = 0.62\text{ mi}$.

Theo, who weighs 110 lb, rides a 12 km trail.

How long is the trail in miles?

Answer it.

Whiteboards · Question 8 of 9

$1\text{ km} = 0.62\text{ mi}$.

Theo, who weighs 110 lb, rides a 12 km trail.

How long is the trail in miles?

$$12 \times 0.62 = 7.44$$

Answer: 7.44 mi

Whiteboards · Question 9 of 9

$1\text{ in} = 2.54\text{ cm}$;

$1\text{ cm} = 0.39\text{ in}$.

Jo converts 30 cm to inches: $30 \times 2.54 = 76.2\text{ in}$.

Name the error and fix it.

Write your answer in sentences.

Whiteboards · Question 9 of 9

$1\text{ in} = 2.54\text{ cm}$;

$1\text{ cm} = 0.39\text{ in}$.

Jo converts 30 cm to inches: $30 \times 2.54 = 76.2\text{ in}$.

Name the error and fix it.

$$30 \times 0.39 = 11.7$$

Answer: She used the inches ratio on centimeters. Inches are bigger, so fewer: 11.7 in.

Independent Set

1. $1\text{ in} = 2.54\text{ cm}$. How many centimeters is 12 in?
2. $1\text{ cm} = 0.39\text{ in}$. How many inches is 40 cm?
3. $1\text{ mi} = 1.61\text{ km}$. How many kilometers is 10 mi?
4. $1\text{ km} = 0.62\text{ mi}$. How many miles is 8 km?
5. $1\text{ yd} = 3\text{ ft}$, $1\text{ ft} = 12\text{ in}$, $1\text{ in} = 2.54\text{ cm}$. How many centimeters is 2 yd? Estimate first.
6. Today's rate: $1\text{ US dollar} = 0.92\text{ euros}$. How many euros is \$50? How many dollars is 23 euros?

IXL

1. Open IXL and start today's skills.
2. Work on paper where the question needs work. The answer box does not show it.
3. Every skill listed is required, to a SmartScore of 67. Due by the Unit 5 test.

Today's skills — all required

Convert between customary and metric systems — E8Z
Compare and convert customary units — 4B8
Compare and convert metric units — HW2