

Name: _____

ID: A

- ___ 9. What is the mass of a 775 g object, expressed in milligrams and in kilograms?
- a. 77 500 mg, 77 500 kg c. 7750 mg, 7.75 kg
b. 775 000 mg, 0.775 kg d. 77.5 mg, 77.5 kg
- ___ 10. A lasagna recipe calls for 800 g ricotta, 800 g of cheddar, 533 g of mozzarella, and 200 g of Parmesan cheese. What is the total mass of cheese needed if you are preparing a half-batch of lasagna?
- a. 1167 g c. 583 g
b. 2333 g d. 1750 g
- ___ 11. What is the mass in tonnes of a sailboat with a mass of 995 kg carrying 3 children, each with a mass of 45 kg, and 5 men, each with a mass of 85 kg?
- a. 0.71 tonnes c. 15.55 tonnes
b. 1.48 tonnes d. 1.56 tonnes
- ___ 12. Ivan can bench press 270 lb at the gym. What is this weight in kilograms?
- a. 127.8 kg c. 102.5 kg
b. 135.0 kg d. 122.5 kg
- ___ 13. What is the price of 600 g of walnuts if they are being sold for \$17.77/kg?
- a. \$10.66 c. \$9.32
b. \$8.67 d. \$10.19

Short Answer

1. Before leaving on vacation to Colorado, USA, you check the state's weather forecast. Say time temperatures are predicted to be between 45°F and 55°F for the following week. What range of temperature in degrees Celsius does this represent? Would it make more sense to pack sweaters or T-shirts?
2. Your clients at a travel agency are looking for a winter vacation spot with temperatures between 25 and 28°C. Which of the following cities would you recommend for them?

City	Average Winter Temperature (°F)
Sydney, Australia	71.8
Maui, USA	76.8
Caracas, Venezuela	77.4
Bangkok, Thailand	78.8
Acapulco, Mexico	83.1

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3. The weight of a snow machine is 850 lb. If the ice on a lake is tested to hold weights of up to 0.8 tons, is it safe for a father weighing 160 lb to take his two children, weighing 62 lb and 78 lb, out onto the ice?

4. A bag of Yukon Gold potatoes weighing 12 pound 8 ounces costs \$10.50, a bag of Russet potatoes weighing 8 pound 14 ounces costs \$8.17, and a bag of purple potatoes weighing 5 pound 6 ounces costs \$5.43. Which of these would be the best deal on potatoes?

5. Christopher bought 2 lb 1 oz of assorted cheeses for a party, at an average cost of \$5.79/lb. If 20% of the cheese was knocked onto the floor during the party and not eaten, what was his true cost per pound?

6. A moving truck has a maximum load capacity of 1.1 tons. If you have an inventory of 80 boxes to move and each box weighs 120 lb, how many trips will be required to move the load?

Problem

1. A commercial bakery uses 435 lb of flour every day to produce 725 loaves of bread.
 - a) How many pounds of flour are required to produce the 400 loaves for the morning delivery?
 - b) How much flour, in tons, will they use during a 5-day work week?
2. An elevator has a maximum capacity of 1350 lb. Billy weighs 165 lb and he has 30 pallets of paper to deliver in the building. Each pallet weighs 80 kg.
 - a) What is the capacity of the elevator in kilograms?
 - b) If Billy always rides the elevator with his paper deliveries, how much remaining capacity does the elevator have in kilograms?
 - c) How many pallets at a time can Billy load into the elevator? He cannot load partial pallets.
 - d) How many trips will Billy make to deliver all the paper?

SHORT ANSWER

MULTIPLE CHOICE

1. ANS: A PTS: 1 DIF: Easy REF: 4.1
OBJ: Measurement LOC: M-SO1 TOP: Temperature Conversions
KEY: Converting from Celsius to Fahrenheit
2. ANS: D PTS: 1 DIF: Easy REF: 4.1
OBJ: Measurement LOC: M-SO2 TOP: Temperature Conversions
KEY: Converting from Celsius to Fahrenheit
3. ANS: A PTS: 1 DIF: Easy REF: 4.1
OBJ: Measurement LOC: M-SO1 TOP: Temperature Conversions
KEY: Converting from Celsius to Fahrenheit
4. ANS: D PTS: 1 DIF: Easy REF: 4.2
OBJ: Measurement LOC: M-SO2 TOP: Mass in the Imperial System
KEY: Converting between imperial units
5. ANS: D PTS: 1 DIF: Moderate REF: 4.2
OBJ: Measurement LOC: M-SO2 TOP: Mass in the Imperial System
KEY: Converting between imperial units
6. ANS: C PTS: 1 DIF: Moderate REF: 4.2
OBJ: Measurement | Number LOC: M-SO2 | N-SO1
TOP: Mass in the Imperial System KEY: Converting between imperial units
7. ANS: B PTS: 1 DIF: Moderate REF: 4.2
OBJ: Measurement LOC: M-SO2 TOP: Mass in the Imperial System
KEY: Converting between imperial units
8. ANS: B PTS: 1 DIF: Moderate REF: 4.2
OBJ: Measurement LOC: M-SO2 TOP: Mass in the Imperial System
KEY: Converting between imperial units
9. ANS: B PTS: 1 DIF: Easy REF: 4.3
OBJ: Measurement LOC: M-SO1 TOP: Mass in the Système International
KEY: Converting between SI units
10. ANS: A PTS: 1 DIF: Easy REF: 4.3
OBJ: Measurement LOC: M-SO1 TOP: Mass in the Système International
KEY: Converting between SI units
11. ANS: D PTS: 1 DIF: Easy REF: 4.3
OBJ: Measurement LOC: M-SO1 TOP: Mass in the Système International
KEY: Converting between SI units
12. ANS: D PTS: 1 DIF: Easy REF: 4.3
OBJ: Measurement LOC: M-SO2 TOP: Mass in the Système International
KEY: Converting between SI units
13. ANS: A PTS: 1 DIF: Easy REF: 4.3
OBJ: Measurement LOC: M-SO1 TOP: Mass in the Système International
KEY: Converting between SI units

1. ANS:
Convert the temperatures to degrees Celsius.
Minimum temperature:

$$C = \frac{5}{9}(F - 32)$$

$$C = \frac{5}{9}(45 - 32)$$

$$C = 7.2^{\circ}\text{C}$$

Maximum temperature:

$$C = \frac{5}{9}(F - 32)$$

$$C = \frac{5}{9}(55 - 32)$$

$$C = 12.7^{\circ}\text{C}$$

The range of temperatures is from 7.2°C to 12.7°C . It would make more sense to pack sweaters.

PTS: 1 DIF: Easy REF: 4.1
LOC: M-SO2 TOP: Temperature Conversions
OBJ: Measurement
KEY: Converting from Fahrenheit to Celsius

2. ANS:
Convert the clients' ideal temperatures to Fahrenheit.

$$F = \frac{9}{5}C + 32$$

$$F = \left(\frac{9}{5} \times 25\right) + 32$$

$$F = 77^{\circ}\text{F}$$

$$F = \frac{9}{5}C + 32$$

$$F = \left(\frac{9}{5} \times 28\right) + 32$$

$$F = 82.4^{\circ}\text{F}$$

The clients are looking for a destination with temperatures between 77°F and 82.4°F . You should recommend Caracas or Bangkok.

PTS: 1 DIF: Moderate REF: 4.1
LOC: M-SO1 TOP: Temperature Conversions
OBJ: Measurement
KEY: Converting from Celsius to Fahrenheit

3. ANS:
Add the weights of the snow machine and people.
 $850 + 160 + 62 + 78 = 1150$ lb

Convert to tons.
 $1150 \text{ lb} \times (1 \text{ tn}/2000 \text{ lb}) = 0.575$ tn

Yes, it is safe to go out on the ice.

PTS: 1 DIF: Moderate REF: 4.2
LOC: M-SO2 TOP: Mass in the Imperial System

OBJ: Measurement
KEY: Converting between imperial units

4. ANS:
Calculate the unit price of each type of potato.
Yukon Gold:
 $12 \text{ lb } 8 \text{ oz} = 12.5 \text{ lb}$
 $\$10.50 \div 12.5 \text{ lb} = \$0.84/\text{lb}$

Russet:
 $8 \text{ lb } 14 \text{ oz} = 8.875 \text{ lb}$
 $\$8.17 \div 8.875 \text{ lb} = \$0.92/\text{lb}$

Purple:
 $5 \text{ lb } 6 \text{ oz} = 5.375 \text{ lb}$
 $\$5.43 \div 5.375 \text{ lb} = \$1.01/\text{lb}$

Yukon Gold is the best deal.

PTS: 1 DIF: Moderate REF: 4.2
LOC: N-SO1 TOP: Mass in the Imperial System

OBJ: Number
KEY: Converting between imperial units

5. ANS:
 $2 \text{ lb } 1 \text{ oz} = 2.0625 \text{ lb}$

Calculate how much Christopher spent on cheese.
Total cost = $2.0625 \text{ lb} \times \$5.79/\text{lb}$

Total cost = \$11.94

Calculate how much cheese was wasted. Convert 20% to a decimal.
 $0.2 \times 2.0625 \text{ lb} = 0.4125 \text{ lb}$

Calculate how much cheese was eaten.
 $2.0625 - 0.4125 = 1.65 \text{ lb}$

Divide the cost of the cheese by the amount of cheese eaten.
True cost = $\$11.94 \div 1.65 \text{ lb}$

True cost = \$7.24/lb

The true cost of the cheese was \$7.24/lb.

PTS: 1 DIF: Difficult REF: 4.2
LOC: N-SO1 TOP: Mass in the Imperial System

OBJ: Number
KEY: Converting between imperial units

6. ANS:
Calculate the total weight of the boxes.
 $120 \text{ lb} \times 80 = 9600 \text{ lb}$

Convert the weight to tons.
 $9600 \text{ lb} \div 2000 \text{ lb/tn} = 4.8 \text{ tn}$

Divide the total weight by the capacity of the truck to find the number of trips needed.
 $4.8 \text{ tn} \div 1.1 \text{ tn} \approx 5$, rounded up

5 trips are needed.

PTS: 1 DIF: Moderate REF: 4.2
LOC: M-SO2 TOP: Measurement

OBJ: Measurement
KEY: Converting between imperial units

PROBLEM

1. ANS:

- a) Calculate how much flour is used per loaf.
 $435 \text{ lb} \div 725 \text{ loaves} = 0.6 \text{ lb/loaf}$

Multiply by 400 loaves.
 $0.6 \text{ lb/loaf} \times 400 \text{ loaves} = 240 \text{ lb}$

The bakery will need 240 lb of flour.

- b) Convert the amount of flour used per day to tons.
 $435 \text{ lb} \div 2000 \text{ lb/tn} = 0.22 \text{ tn/day}$

Multiply by 5 days.
 $0.22 \text{ tn/day} \times 5 \text{ days} = 1.1 \text{ tn}$

The bakery will use 1.1 tn of flour in 5 days.

PTS: 1 DIF: Moderate REF: 4.2
 LOC: M-SO2 TOP: Mass in the Imperial System

OBJ: Measurement
 KEY: Converting between imperial units

2. ANS:

- a) $1350 \text{ lb} \times 1 \text{ kg}/2.2 \text{ lb} = 613.6 \text{ kg}$

The capacity of the elevator is 613.6 kg.

- b) Convert Billy's weight to kilograms.
 $165 \text{ lb} \times 1 \text{ kg}/2.2 \text{ lb} = 75.0 \text{ kg}$

$613.6 \text{ kg} - 75.0 \text{ kg} = 538.6 \text{ kg}$

The remaining capacity of the elevator is 538.6 kg.

- c) Divide the remaining capacity by the weight of one pallet.
 $538.6 \text{ kg} \div 80 \text{ kg/pallet} = 6.73 \text{ pallets}$

Since Billy cannot load partial pallets, the maximum he can load at a time is 6 pallets.

- d) Divide the total number of pallets by the number of pallets that can be loaded into the elevator per trip.
 $30 \div 6 = 5$

It will take Billy 5 trips to deliver all the paper.

PTS: 1 DIF: Difficult REF: 4.3
 LOC: M-SO2 TOP: Mass in the Systeme International
 KEY: Converting from imperial to SI units

OBJ: Measurement