Sample Questions

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Which reasoning process is shown in the following example?

1) We examine the social security numbers of 100 people. No two individuals from this group of people have identical social security numbers. We conclude that for all people, no two people have identical social security numbers. 1) _____

A) theoretical reasoning
B) inductive reasoning
C) deductive reasoning
D) reasoning by counterexample

Objective: (1.1) Understand and Use Deductive Reasoning

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

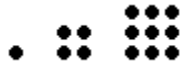
Find a counterexample to show that the statement is false.

2) All actors are Academy Award winners. 2) _____

Objective: (1.1) Understand and Use Inductive Reasoning

Solve the problem using inductive reasoning.

3) Write the next three "square" figurate numbers. 3) _____



Objective: (1.1) Understand and Use Inductive Reasoning

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Use inductive reasoning to predict the next line in the pattern. Then perform the arithmetic to determine whether your conjecture is correct.

4) $8(5) = 10(5 - 1)$ 4) _____

$8(5) + 8(25) = 10(25 - 1)$

$8(5) + 8(25) + 8(125) = 10(125 - 1)$

$8(5) + 8(25) + 8(125) + 8(625) = 10(625 - 1)$

A) $8(5) + 8(25) + 8(125) + 8(625) + 8(3125) = 8(3125 - 1)$
B) $8(5) + 8(25) + 8(125) + 8(625) + 8(5000) = 10(5000 - 1)$
C) $8(5) + 8(25) + 8(125) + 8(625) + 8(3125) = 10(3125 - 1)$
D) $8(5) + 8(25) + 8(125) + 8(625) + 8(1250) = 10(1250 - 1)$

Objective: (1.1) Understand and Use Inductive Reasoning

Identify a pattern in the list of numbers. Then use this pattern to find the next number.

5) $1, -\frac{1}{2}, \frac{1}{4}, -\frac{1}{8}, \frac{1}{16}$ 5) _____

A) –1/64 B) 1/64 C) 1/32 D) –1/32

Objective: (1.1) Understand and Use Inductive Reasoning

Use inductive reasoning to predict the next line in the pattern. Then perform the arithmetic to determine whether your conjecture is correct.

6) $4 \times 6 = 5 \times 7 - 11$ 6) _____
$6 \times 8 = 7 \times 9 - 15$

A) $8 \times 10 = 9 \times 11 - 19$ B) $8 \times 10 = 9 \times 11 - 17$
C) $8 \times 10 = 9 \times 11 + 17$ D) $8 \times 10 = 11 \times 15 - 19$

Objective: (1.1) Understand and Use Inductive Reasoning

Use the four–step method in problem solving to solve the problem.

7) CD's were purchased at $70 per dozen and sold at $45 for four CD's. Find the profit on 9 dozen CD's. 7) _____

A) $225 B) $65 C) $585 D) $25

Objective: (1.3) Solve Problems Using the Organization of the Four–Step Problem–Solving Process

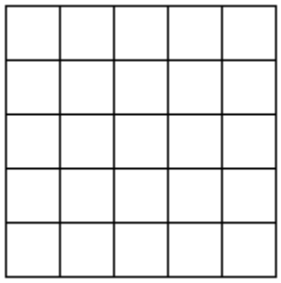
8) City A has an elevation of 3447 feet above sea level while city B has an elevation of 86 feet below sea level. How much higher is City A than City B? 8) _____

A) -3361 feet B) 3533 feet C) -3261 feet D) 3633 feet

Objective: (1.3) Solve Problems Using the Organization of the Four–Step Problem–Solving Process

Solve the problem using the strategy of your choice.

9) Find the number of squares in the figure. 9) _____



A) 25 B) 30 C) 26 D) 55

Objective: (1.3) Solve Problems Using the Organization of the Four–Step Problem–Solving Process

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

10) Some numbers in the printing of a division problem have become illegible. They are designated below by *. Fill in the blanks. 10) _____

```
      1 * *
* *)5 * * *
      3 6
    * 7 2
    * * *
    -----
      * **
      * * *
      -----
          0
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Objective: (1.3) Solve Problems Using the Organization of the Four–Step Problem–Solving Process

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Evaluate the expression.

11) 8^3 11) _____

A) 64 B) 11 C) 512 D) 24

Objective: (4.1) Evaluate an Exponential Expression

Express the expanded form as a Hindu–Arabic numeral.

12) $(3 \times 10^6) + (9 \times 10^5) + (7 \times 10^4) + (9 \times 10^3) + (6 \times 10^2) + (3 \times 10^1) + (7 \times 1)$ 12) _____

A) 44 B) 3,979,637 C) 214,326 D) 440

Objective: (4.1) Express a Number's Expanded Form as a Hindu–Arabic Numeral

If n is a natural number, then $10^{-n} = \frac{1}{10^n}$. Negative powers of 10 can be used to write the decimal part of Hindu –Arabic numerals in expanded form. Express the expanded form as a Hindu –Arabic numeral.

13) $(3 \times 1) + (8 \times 10^{-1})$ 13) _____

A) 38 B) 0.24 C) 11 D) 3.8

Objective: (4.1) Express a Number's Expanded Form as a Hindu–Arabic Numeral

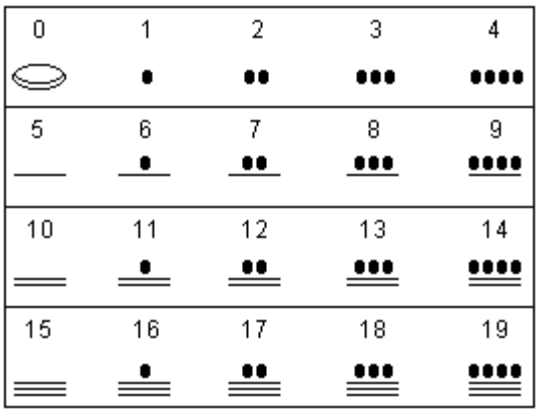
If the Babylonian numeral V stands for one and the Babylonian numeral $<$ stands for ten, then write the Babylonian numeral as a Hindu–Arabic numeral.

14) $<<\mathrm{V}\,\mathrm{V}\,\mathrm{V}$ 14) _____

A) 23 B) 5 C) 32 D) 50

Objective: (4.1) Understand and Use the Babylonian Numeration System

Use the table below to write the Mayan numeral as a Hindu–Arabic numeral.



15) 15) _____

A) 4 B) 19 C) 14 D) 10

Objective: (4.1) Understand and Use the Mayan Numeration System

Write the Hindu–Arabic numeral in expanded form.

16) 480,007,002 16) _____

A) $(4 \times 10^8) + (8 \times 10^7) + (0 \times 10^6) + (0 \times 10^5) + (0 \times 10^4) + (0 \times 10^2) + (0 \times 10^1) + (2 \times 1)$

B) $(4 \times 10^8) + (0 \times 10^6) + (0 \times 10^5) + (0 \times 10^4) + (7 \times 10^3) + (0 \times 10^2) + (0 \times 10^1) + (2 \times 1)$

C) $(4 \times 10^8) + (8 \times 10^7) + (0 \times 10^6) + (0 \times 10^5) + (0 \times 10^4) + (7 \times 10^3) + (0 \times 10^2) + (0 \times 10^1)$

D) $(4 \times 10^8) + (8 \times 10^7) + (0 \times 10^6) + (0 \times 10^5) + (0 \times 10^4) + (7 \times 10^3) + (0 \times 10^2) + (0 \times 10^1) + (2 \times 1)$

Objective: (4.1) Write a Hindu–Arabic Numeral in Expanded Form

Convert the number to the indicated base.

17) 303_{four} to base eight 17) _____

A) 75_{eight} B) 51_{eight} C) 63_{eight} D) 37_{eight}

Objective: (4.2) Change Base Ten Numerals to Numerals in Other Bases

Write the binary representation for the letter or word.

18) C 18) _____

A) 1000111 B) 1110011 C) 1000011 D) 1100001

Objective: (4.2) Change Base Ten Numerals to Numerals in Other Bases

Use divisions to convert the base ten numeral to a numeral in the given base.

19) 295 to base six 19) _____

A) 121_{six} B) 1221_{six} C) 2211_{six} D) 1211_{six}

Objective: (4.2) Change Base Ten Numerals to Numerals in Other Bases

20) 83 to base five 20) _____

A) 413_{five} B) 313_{five} C) 133_{five} D) 410_{five}

Objective: (4.2) Change Base Ten Numerals to Numerals in Other Bases

Convert the number to the indicated base.

21) 10001_{two} to base eight 21) _____

A) 88_{eight} B) 11_{eight} C) 22_{eight} D) 21_{eight}

Objective: (4.2) Change Base Ten Numerals to Numerals in Other Bases

Use divisions to convert the base ten numeral to a numeral in the given base.

22) 2,874 to base seven 22) _____

A) $11{,}244_{\text{seven}}$ B) $11{,}422_{\text{seven}}$ C) $11{,}224_{\text{seven}}$ D) $11{,}442_{\text{seven}}$

Objective: (4.2) Change Base Ten Numerals to Numerals in Other Bases

Convert the numeral to a numeral in base ten.

23) 3207_{nine} 23) _____

A) 268 B) 2943 C) 2356 D) 28,863

Objective: (4.2) Change Numerals in Bases Other Than Ten to Base Ten

Break the binary sequence into groups of seven digits and write the word represented by the sequence.

24) 1001100100000110011011010000 24) _____

A) damp B) lamp C) swamp D) map

Objective: (4.2) Change Numerals in Bases Other Than Ten to Base Ten

Convert the numeral to a numeral in base ten.

25) 22_{five} 25) _____

A) 110 B) 12 C) 60 D) 20

Objective: (4.2) Change Numerals in Bases Other Than Ten to Base Ten

Write the Egyptian numeral as a Hindu–Arabic numeral using the table below.

Hindu-Arabic Numeral	Egyptian Numeral	Description
1		**Staff**
10		**Heel bone**
100		**Spiral**
1000		**Lotus blossom**
10,000		**Pointing finger**
100,000		**Tadpole**
1,000,000		**Astonished person**

26) 26) _____

A) 2,300,223 B) 2,030,223 C) 23,223 D) 2,003,223

Objective: (4.4) Understand and Use the Egyptian System

Write the Hindu–Arabic numeral as an Egyptian numeral using the table below.

Hindu-Arabic Numeral	Egyptian Numeral	Description
1		Staff
10		Heel bone
100		Spiral
1000		Lotus blossom
10,000		Pointing finger
100,000		Tadpole
1,000,000		Astonished person

27) 32,457 27) _____

A)

B)

C)

D)

Objective: (4.4) Understand and Use the Egyptian System

Write the Hindu–Arabic numeral as an Ionic Greek numeral using the table below.

Hindu-Arabic Numeral	Ionic Greek Numeral	Hindu-Arabic Numeral	Ionic Greek Numeral	Hindu-Arabic Numeral	Ionic Greek Numeral
1	α	20	κ	200	σ
2	β	30	λ	300	τ
3	γ	40	μ	400	υ
4	δ	50	ν	500	φ
5	ε	60	ξ	600	χ
6	ϛ	70	ο	700	ψ
7	ζ	80	π	800	ω
8	η	90	Q	900	ϡ
9	θ	100	ϱ		
10	ι				

28) 52 28) _____

A) βε B) νε C) εβ D) νβ

Objective: (4.4) Understand and Use the Ionic Greek System

Write the Ionic Greek numeral as a Hindu–Arabic numeral using the table below.

Hindu-Arabic Numeral	Ionic Greek Numeral	Hindu-Arabic Numeral	Ionic Greek Numeral	Hindu-Arabic Numeral	Ionic Greek Numeral
1	α	20	κ	200	σ
2	β	30	λ	300	τ
3	γ	40	μ	400	υ
4	δ	50	ν	500	φ
5	ε	60	ξ	600	χ
6	ϛ	70	ο	700	ψ
7	ζ	80	π	800	ω
8	η	90	Ϙ	900	ϡ
9	θ	100	ϱ		
10	ι				

29) τπδ 29) _____

A) 284 B) 482 C) 483 D) 384

Objective: (4.4) Understand and Use the Ionic Greek System

Write the Hindu–Arabic numeral as a Roman numeral.

30) 42 30) _____

A) LVVII B) XLII C) LXII D) XXXXII

Objective: (4.4) Understand and Use the Roman System

Write the Roman numeral as a Hindu–Arabic numeral.

31) XLVI 31) _____

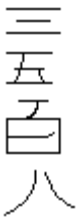
A) 46 B) 54 C) 154 D) 165

Objective: (4.4) Understand and Use the Roman System

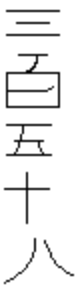
Use the table below to write the Hindu–Arabic numeral as a traditional Chinese numeral.

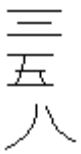
Hindu-Arabic Numerals	Traditional Chinese Numerals
1	一
2	二
3	三
4	四
5	五
6	六
7	七
8	八
9	九
10	十
100	百
1000	千

32) 358 32) _____

A) 

B) 

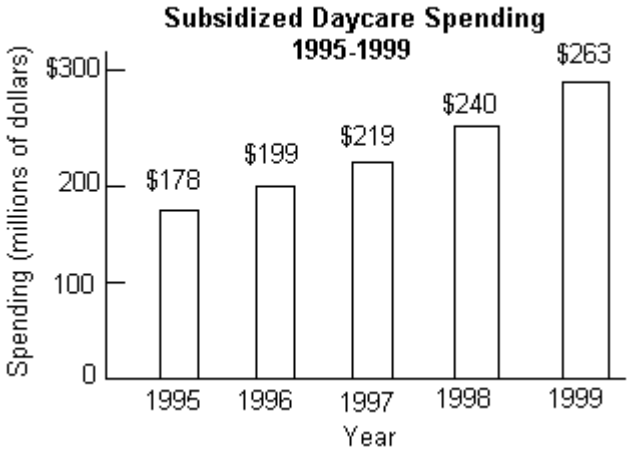
C) 

D) 

Objective: (4.4) Understand and Use the Traditional Chinese System

The graph shows the level of subsidized daycare spending in a foreign country for the period 1995 –1999. Use the graph to answer the question.

33) Find the percent increase in daycare spending from 1995 to 1996. Round to the nearest percent. 33) _____



A) 13% B) 12% C) 0.11% D) 11%

Objective: (8.1) Determine Percent Increase or Decrease

Write the decimal as a percent.

34) 0.00457 34) _____

A) 0.000457% B) 0.2285% C) 0.0457% D) 0.457%

Objective: (8.1) Express a Decimal as a Percent

Express the fraction as a percent.

35) $\frac{57}{80}$ 35) _____

A) 7.13 % B) 1.4 % C) 14.04 % D) 71.25 %

Objective: (8.1) Express a Fraction as a Percent

Express the percent as a decimal.

36) 81% 36) _____

A) 0.7 B) 0.81 C) 0.081 D) 8.1

Objective: (8.1) Express a Percent as a Decimal

Solve the problem.

37) The price of an item is reduced by 40% of its original price. A week later it is reduced by 10% of the reduced price. The cashier informs you that there has been a total reduction of 50%. Is the cashier using percentages correctly? If not, what is the actual percent reduction from the original price? 37) _____

A) The cashier is not using percentages correctly. The actual percent reduction from the original price is 54%.

B) The cashier is not using percentages correctly. The actual percent reduction from the original price is 25%.

C) The cashier is using percentages correctly.

D) The cashier is not using percentages correctly. The actual percent reduction from the original price is 46%.

Objective: (8.1) Investigate Some of the Ways Percent Can Be Abused

38) 253.5 is $16\frac{1}{4}$% of what number? 38) _____

A) 156 B) 15.6 C) 1560 D) 15,600

Objective: (8.1) Solve Applied Problems Involving Sales Tax and Discounts

39) 135% of what number is 54? 39) _____

A) 18,225 B) 182.25 C) 400 D) 40

Objective: (8.1) Solve Applied Problems Involving Sales Tax and Discounts

40) 21 is 6% of what number? 40) _____

A) 126 B) 3500 C) 350 D) 35

Objective: (8.1) Solve Applied Problems Involving Sales Tax and Discounts

41) What number is 61% of 40? 41) _____

A) 24,400 B) 2440 C) 244 D) 24.4

Objective: (8.1) Solve Applied Problems Involving Sales Tax and Discounts

The principal P is borrowed at simple interest rate r for a period of time t. Find the simple interest owed for the use of the money. Assume 360 days in a year and round answer to the nearest cent.

42) P = $200.00 42) _____

r = 5%

t = 5 months

A) $204.17 B) $4.17 C) $50.00 D) $250.00

Objective: (8.3) Calculate Simple Interest

The principal P is borrowed and the loan's future value, A, at time t is given. Determine the loan's simple interest rate, r, to the nearest tenth of a percent.

43) P = $3000, A = $3270, t = 1 year 43) _____

A) 9.9% B) 9% C) 18% D) 9.3%

Objective: (8.3) Use the Future Value Formula

44) P = $700.00, A = $729.75, t = 3 months 44) _____

A) 34% B) 5.5% C) 17% D) 17.2%

Objective: (8.3) Use the Future Value Formula

The principal P is borrowed at simple interest rate r for a period of time t. Find the loan's future value, A, or the total amount due at time t. Round answer to the nearest cent.

45) P = $5900, r = 4.5%, t = 22 months 45) _____

A) $6386.75 B) $6431.00 C) $6391.75 D) $11,741.00

Objective: (8.3) Use the Future Value Formula

Solve the problem.

$$A = P\left(1 + \frac{r}{n}\right)^{nt} \qquad P = \frac{A}{\left(1 + \frac{r}{n}\right)^{nt}} \qquad A = Pe^{rt} \qquad Y = \left(1 + \frac{r}{n}\right)^{n} - 1$$

46) James and Susan wish to have $10,000 available for their wedding in 4 years. How much money should they set aside now at 6% compounded monthly in order to reach their financial goal? 46) _____

A) $7870.98 B) $10,616.78 C) $2500.00 D) $9419.05

Objective: (8.4) Calculate Present Value

Solve the problem. Round to the nearest tenth of a percent.

$$A = P\left(1 + \frac{r}{n}\right)^{nt} \qquad P = \frac{A}{\left(1 + \frac{r}{n}\right)^{nt}} \qquad A = Pe^{rt} \qquad Y = \left(1 + \frac{r}{n}\right)^{n} - 1$$

47) A passbook savings account has a rate of 5%. Find the effective annual yield if the interest is compounded daily. 47) _____

A) 5.1% B) 5.6% C) 5.3% D) 5%

Objective: (8.4) Understand and Compute Effective Annual Yield

Solve the problem.

48) If you placed $1 into an account that paid interest at a rate of 5% and compounded the interest monthly, how much would that account be worth in 300 years? 48) _____

A) $3.48 B) $3,168,714.47 C) $1,584,357.24 D) $1793.99

Objective: (8.4) Use Compound Interest Formulas

49) Suppose Carla has $12,000 to invest. Which investment yields the greater return over 2 years: 9% compounded quarterly or 8.85% compounded monthly? 49) _____

A) They are the same.
B) The rate of 8.85% compounded monthly is better.
C) The rate of 9% compounded quarterly is better.

Objective: (8.4) Use Compound Interest Formulas

Use $PMT = \dfrac{P\left(\frac{r}{n}\right)}{\left[1-\left(1+\frac{r}{n}\right)^{-nt}\right]}$ to determine the regular payment amount, rounded to the nearest dollar.

50) Suppose your credit card has a balance of $6500 and an annual interest rate of 14%. You decide to pay off the balance over three years. If there are no further purchases charged to the card, 50) _____

(a) How much must you pay each month?
(b) How much total interest will you pay?
Now suppose decide to pay off the balance over one year rather than three.
(c) How much more must you pay each month?
(d) How much less will you pay in total interest?

A) (a) $231
(b) $1816
(c) $361 more per month;
(d) $1212 less in total interest

B) (a) $231
(b) $604
(c) $361 more per month;
(d) $1212 less in total interest

C) (a) $222
(b) $1492
(c) $362 more per month
(d) $984 less in total interest

D) (a) $222
(b) $508
(c) $362 more per month
(d) $984 less in total interest

Objective: (8.8) Find the Interest, the Balance Due, and the Minimum Monthly Payment for Credit Card Loans

Determine whether the statement is true or false.

51) Credit reports include details about all of your open and closed credit accounts. 51) _____
A) True B) False

Objective: (8.8) Know What is Contained in a Credit Report

52) The higher your credit score, the more likely you are to get the best interest rates on loans. 52) _____
A) True B) False

Objective: (8.8) Understand Credit Scores as Measures of Creditworthiness

53) Unlike writing a check, using a debit card frees you from paying overdraft charges. 53) _____
A) True B) False

Objective: (8.8) Understand the Difference Between Credit Cards and Debit Cards

54) An advantage of using a credit card is that it allows you to shop over the phone or on the Internet. 54) _____
A) True B) False

Objective: (8.8) Understand the Pros and Cons of Using Credit Cards

Convert the given measurement to the unit indicated.

55) 48.0 dm to m 55) _____
A) 0.48 m B) 4800 m C) 480 m D) 4.8 m

Objective: (9.1) Convert Units Within the Metric System

Solve the problem.

56) A race track is 540 meters long. If a driver goes around the race track twice, how many kilometers did the driver travel? 56) _____
A) 540,000 km B) 1.080 km C) 0.540 km D) 1,080,000 km

Objective: (9.1) Convert Units Within the Metric System

Selecting from millimeter, meter, dekameter, and kilometer, determine the best unit of measure to express the given length.

57) the length of a worm 57) _____

A) millimeter B) kilometer C) dekameter D) meter

Objective: (9.1) Understand and Use Metric Prefixes

58) a door's height 58) _____

A) dekameter B) meter C) millimeter D) kilometer

Objective: (9.1) Understand and Use Metric Prefixes

Use dimensional analysis to convert the unit indicated.

59) 270 in. to hm 59) _____

A) 106.3 hm B) 1.06 hm C) 0.06858 hm D) 6,858,000 hm

Objective: (9.1) Use Dimensional Analysis to Change to and from the Metric System

60) 6 m to ft 60) _____

A) 5.4 ft B) 19.7 ft C) 6.7 ft D) 1.8 ft

Objective: (9.1) Use Dimensional Analysis to Change to and from the Metric System

61) 3 m to yd 61) _____

A) 3.3 yd B) 0.3 yd C) 2.7 yd D) 0.4 yd

Objective: (9.1) Use Dimensional Analysis to Change to and from the Metric System

Use dimensional analysis to convert the quantity to the indicated units. If necessary, round the answer to two decimal places.

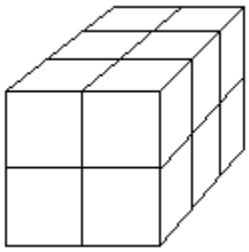
62) 63 ft to yd 62) _____

A) 189 yd B) 21 yd C) 2268 yd D) 7 yd

Objective: (9.1) Use Dimensional Analysis to Change Units of Measurement

Use the figure below to find its volume in cubic units.

63) 63) _____



A) 10 units^3 B) 6 units^3 C) 12 units^3 D) 7 units^3

Objective: (9.2) Use Cubic Units to Measure Volume

Use dimensional analysis to convert the given square unit to the square unit indicated. Where necessary, round the answer to two decimal places.

64) 9 cm^2 to in.^{2} 64) _____

A) 1.38 in.^{2} B) 22.86 in.^{2} C) 58.5 in.^{2} D) 8.1 in.^{2}

Objective: (9.2) Use Dimensional Analysis to Change Units for Area

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the problem.

65) A television set has an area of 169 square inches (in^2). How many square feet (ft^2) is this? Round to the nearest hundredth. 65) _____

Objective: (9.2) Use Dimensional Analysis to Change Units for Area

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

66) A container of motor oil has a volume of 7000 cubic centimeters. How many liters of oil does the container hold? 66) _____

A) 70 L B) 7000 L C) 7 L D) 700 L

Objective: (9.2) Use English and Metric Units to Measure Capacity

Use dimensional analysis to convert the given unit to the unit indicated. Where necessary, round answer to two decimal places.

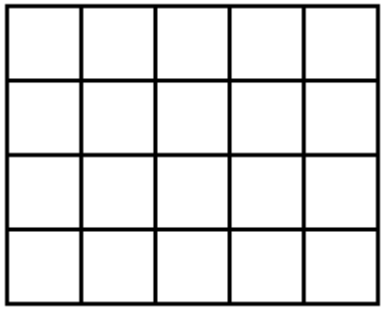
67) 4488 gal to ft^3 67) _____

A) 60 ft^3 B) 448.8 ft^3 C) 44.88 ft^3 D) 600 ft^3

Objective: (9.2) Use English and Metric Units to Measure Capacity

Use the given figure to find its area in square units.

68) 68) _____



A) 16 square units B) 9 square units C) 20 square units D) 25 square units

Objective: (9.2) Use Square Units to Measure Area

Selecting from milligram, gram, kilogram, and tonne, determine the best unit of measure to express the given weight.

69) a truck 69) _____

A) tonne B) milligram C) gram D) kilogram

Objective: (9.3) Apply Metric Prefixes to Units of Weight

Select the best estimate for the weight of the given item.

70) the weight of a newly constructed cruise ship 70) _____

A) 6000 mg B) 6000 kg C) 6000 t D) 6000 g

Objective: (9.3) Apply Metric Prefixes to Units of Weight

Convert the given unit of weight to the unit indicated.

71) 7.7 dg to mg 71) _____

A) 0.77 mg B) 7700 mg C) 77 mg D) 770 mg

Objective: (9.3) Convert Units of Weight Within the Metric System

Convert the given Fahrenheit temperature to its equivalent temperature on the Celsius scale. Where appropriate, round to the nearest tenth of a degree.

72) -10°F 72) _____

A) 12.2°C B) 14.0°C C) -37.6°C D) -23.3°C

Objective: (9.3) Understand Temperature Scales

Use dimensional analysis to convert the given quantity to the units indicated. When necessary, round answers to two decimal places.

73) 77 oz to g 73) _____

A) 34.65 g B) 1232 g C) 2.75 g D) 2156 g

Objective: (9.3) Use Dimensional Analysis to Change Units of Weight to and from the Metric System

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the problem.

74) The Holly cousins, Crash and Bob, have a combined weight of 800 pounds. What is their weight in kilograms (kg)? 74) _____

Objective: (9.3) Use Dimensional Analysis to Change Units of Weight to and from the Metric System

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Convert as indicated.

75) 0.77 kg to cm^3 75) _____

A) 77 cm^3 B) 770 cm^3 C) 0.0077 cm^3 D) 0.00077 cm^3

Objective: (9.3) Use Relationships Between Volume and Weight Within the Metric System