Simple Interest

$$I = Prt$$
$$A = P + I$$
$$A = P(1 + rt)$$

Compound Interest

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

$$A = Pe^{rt}$$

Payment on a Loan

$$R = \frac{P\left(\frac{r}{n}\right)}{\left(1 - \left(1 + \frac{r}{n}\right)^{-nt}\right)}$$

If R = monthly, then $n = 12$ and t = number of years
Student Loan Monthly Payment over 10 years

Effective yield: $E = \left(1 + \frac{r}{n}\right)^n - 1$

Unearned Interest

$$U = \frac{kRh}{100+h} \quad \text{or} \quad U_{78} = \frac{F(k(k+1))}{(n(n+1))}$$

Periodic Payment for Annuity

$$R = \frac{A\left(\frac{r}{n}\right)}{\left(\left(1 + \frac{r}{n}\right)^{nt} - 1\right)}$$

If R = monthly, then $n = 12$ and t = number of years

Future Value of an Annuity

$$A = \frac{R\left(\left(1 + \frac{r}{n}\right)^{nt} - 1\right)}{\left(\frac{r}{n}\right)}$$

If R = monthly, then $n = 12$ and t = number of years

Student Loan Interest

$$\text{Daily} = \frac{\text{principal balance} * \text{interest rate}}{365.25}$$

$$\text{Monthly} = \text{daily interest} \times \text{days in month}$$

Conversion Factors for Length and Area

12 inches (in) = 1 foot (ft)
3 feet = 1 yard (yd)
5,280 feet = 1 mile (mi)
1 in = 2.54 cm
1 mi ≈ 1.61 km
1 acre = 43,560 ft²
1 mi² = 640 acres

Metric Prefixes

Kilo (k) = 1,000 units
Hecto (h) = 100 units
Deka (da) = 10 units
Base unit: - meter (length), -liter (volume), -gram (weight)
Deci (d) = 1/10 of a unit
Centi (c) = 1/100 of a unit
Milli (m) = 1/1000 of a unit

Conversion Factors for Capacity

1 pint (pt) = 16 fluid ounces (oz)
1 quart (qt) = 2 pints (pt)
1 gallon (gal) = 4 quarts (qt)
1 cubic foot ≈ 7.48 gal
1 ft³ freshwater ≈ 62.5 lb
1 ft³ seawater ≈ 64 lb
1 cm³ = 1 mL
1 L ≈ 1.06 quarts

Units of Weight

16 ounces (oz) = 1 pound (lb)
2,000 lb = 1 ton (T)
1,000 kg = 1 metric ton (t)
1kg ≈ 2.2 pounds
1 oz ≈ 28 g

Fahrenheit–Celsius Conversions

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

Formulas for Circles

$$A_{circle} = \pi r^2 \qquad C_{circle} = 2\pi r$$

Volume Formulas

$$V_{cylinder} = \pi r^2 h \qquad V_{sphere} = \frac{4}{3}\pi r^3$$

QR 101: Review for the Final Exam
This is to help prepare you for the Final Exam. It is not all inclusive of the material covered.
Therefore, items not on this review may appear on the exam.

Unit 2 — Test Review for Managing Your Money
1) A coat was reduced from $250 to $200.   Determine the percent decrease.

2) The average teachers' and superintendents' salaries for a school district was $43,640. Eight years later, the new average was $55,176. Determine the percent increase to the nearest tenth of a percent.

3) The sale price of a spring break vacation package was $164.99, and the travel agent said by booking early, you saved $35. Determine the percent decrease in price.

4) Determine the sales tax and total cost of an item that costs $49.95 if the tax rate is 6.5%.

5) A desk with an original price of $229.99 is on sale for 20% off.   Determine the sale price.

6) A real estate agent received a 6% commission on the sale of a home.   If his commission was $22,620, how much did the home sell for?

7) The sales tax in Pennsylvania is 5%. If the tax on an item is $99, Determine the cost of the item.

8) According to a government agency, there were 103,600 chefs/head cooks employed in the United States in 2010 and 319,600 food service managers. Those numbers were projected to decrease to 102,400 and 316,200 by 2020. Determine the percent decrease for each and which job was facing the larger percent decrease?

9) Marlene works full-time as an executive assistant, and she has a check for $1,702.11 direct-deposited into her checking account every other Friday. How much money does Marlene make per year? There are different approaches to calculating this amount, so make sure that you describe how you arrived at your answer.

10) If a worker is paid a salary of $45,400 per year and is in a tax bracket that results in 26% deductions, what is her monthly take-home pay?

11) My friend Charles noticed that one of his students came to class every day with two cups of coffee from a well-known coffee chain that isn't exactly famous for their low prices. He asked her if she'd ever thought about how much she spent on that coffee over the course of a year; not surprisingly, she had not. If she paid $2.95 per cup for that coffee every day, how much would she spend on coffee in a year?

12) Rita shares an apartment with two friends, and the rent and utilities are split equally by all three tenants. Determine the amount left for variable expenses and luxuries if her monthly income is $1,720.18 and fixed expenses are shown below.

Total rent:	$1,601	Total utilities	$277
Public transportation:	$89	Cell Phone:	$88.50
Insurance:	$48.60	Gym membership	$38.95

13) Leslie's monthly income is $1,590.10 and has fixed expenses of $847.05. Leslie treats her roommates to salads and pizzas from Papa Antonio's every Monday and Thursday, at a cost of $27 each day. What percentage of her budget after fixed expenses goes toward these semiweekly gatherings on average?

14) Jin pays $320.29 every six months for car insurance. He also pays $2,702 for tuition at the beginning of both fall and spring semesters, and budgets $700 for books and supplies for each semester. If he wants to plan ahead, how much money should he put into savings every month? Explain how you decided on that amount.

15) In many cases, property taxes when you own a home are paid every six months, homeowner's insurance is paid once per year, and car insurance is paid every six months. One homeowner pays $1,450 in property taxes twice a year, $946 in homeowner's insurance annually, and makes car insurance payments of $294.32 and $335.40 every six months. If this homeowner wants to spread these expenses out by putting some money each month into a savings account, how much should she put aside per month?

16) Dr. Phillips borrowed some money to buy new furniture for her office.   She paid $225.00 simple interest on a 5-year loan at 6%.   Determine the principal.

17) Determine the simple interest on a loan of $7,100 for 8 years at a rate of 11.5% per year.

18) $23,700 is invested for 30 months in a savings account with a rate of 5.5% simple interest per year. Determine the interest.

19) Determine the future value of a loan if $3,500 is borrowed for 4 years at a simple interest rate of 9% per year.

20) Marta needs some quick cash for books at the beginning of spring semester, so she borrows $600 at 11% simple interest for 4 months. How much interest will she pay, and what is the future value of the loan?

21) The Elk Restaurant took out a loan for $9,000. The simple interest rate was 6.9%, and the term of the loan was 3 years. Determine the interest, future value, and monthly payment.

22) If you invest $6,000 for 42 months and receive $840 in simple interest, what was the rate?

23) A pawn shop offers to finance a guitar costing $800 at 4% simple interest. The total interest charged will be $160. What is the term of the loan and the monthly payment?

24) For an investment of $100,000 at 5% interest for 7 years, find (a) the simple interest, and (b) the compound interest if interest is calculated once per year.

25) Determine the effective rate when the stated rate is 16.5% and the interest is compounded quarterly.

26) Determine the effective rate when the stated rate is 13% and the interest is compounded semiannually.

27) In order to help pay for college, the grandparents of a child invest $3,100 in a bond that pays 15% interest compounded quarterly.   How much money will there be in 7.5 years?

28) As part of his retirement planning, Mr. Allen purchases an annuity that pays 6% compounded annually. If the yearly payment is $3,000, how much will Mr. Allen have saved in 6 years and how much interest was earned?

29) Suppose you plan to work right after you graduate, but still save money for graduate school. You decide to save $45,000 before starting graduate school and find a monthly annuity that pays 7% interest for 6 years. How much will you need to pay each month?

30) Determine the interest on an investment of $75,000 that pays 8.3% compounded weekly for 6 years.

31) Kelly purchased a toaster for $130. She made a down payment of 20% and financed the rest for 12 months with payments of $11.83. Determine (a) the down payment and (b) the total installment price of the toaster.

32) A graphic design pro buys a new iMac for $1,499 with a $310 down payment and gets manufacturer financing for 5 years at 15% APR. Determine (a) the amount financed; (b) the monthly payment; (c) the total installment price; and (d) the finance charge.

33) If you buy a used car for $8,200 with a down payment of $1,300 and 36 monthly payments of $250, Determine the amount financed, the total installment price, and the finance charge.

34) You just had a baby daughter and decided to save $250 per month in an annuity that pays 6.5% compounded monthly. How much will you have in the account 18 years later when she get a scholarship with the Air Force which affords you the opportunity to keep the money?

35) A credit card statement showed these transactions during June.

June 1	Previous Balance	$420.54
June 2	Purchases	$23.35
June 11	Payment	$85.00
June 27	Purchases	$66.90

The credit card has an interest rate of 5% per month on the average daily balance. Determine the average daily balance, the finance charge for the month, and the new balance on July 1. [Hint: Remember that June has 30 days.]

36) Raoul's credit card statement showed these transactions during May.

May 1	Previous Balance	$304.29
May 6	Payment	$100.00
May 10	Purchases	$58.10
May 15	Payment	$100.00
May 26	Purchases	$114.73

The interest rate is 1.8% per month on the average daily balance. Determine the average daily balance, the finance charge for the month, and the new balance on June 1. [Hint: Remember that May has 31 days.]

37) A credit card statement for the month of November showed the following transactions:

November 1	Previous Balance	$900.36
November 4	Purchases	$350.52
November 13	Payment	$400.00
November 20	Purchases	$89.95
November 28	Payment	$100.00

   a. Determine the average daily balance.
   b. Determine the finance charge. The interest rate is 1.9% on the average daily balance.
   c. Determine the new balance on December 1.

38) For a student loan, the daily interest amount is calculated by:

39) For a student loan, monthly interest amount is calculated by:

40) For a $6,900 student loan: if you start school in August, graduate in May (3 years and 9 months later) and payments begin 6 months after graduation, how much time will pass while interest is accruing?

41) A student loan is taken out for $9,100 at 6.2%. Determine the interest that accrues in a 30-day month.

42) An unsubsidized student loan is taken out for $8,400 at 7.4%. The student graduates 3 years and 9 months after the loan is acquired. Payments are deferred for six months after graduation. Determine the yearly interest, daily interest, monthly interest, and the total amount of interest that will accrue before regular payments begin. For the months, use 30-day months.

43) An unsubsidized student loan is taken out for $7,600 at 6.4%. The student graduates 3 years and 3 months after the loan is acquired. Payments are deferred for six months after graduation. Determine the monthly payment. Assume 30-day months and that the term of the loan is 10 years. Also, the total interest paid over the life of the lone.   If this was a subsidized loan, how much would the student save over the life of the loan?

44) The Petey family plans to buy a home for $229,800 and has been offered a 30-year-mortgage with a rate of 5.5% if they make a 20% down payment. Calculate the down payment and the amount they'll have to borrow.

45) The Franklin family plans to buy a home for $226,100 and has been offered a 30-year-mortgage with a rate of 6.2% if they make a 20% down payment. The monthly payment on the loan will be $1,107.83. How much will the Franklin's actually pay for their home if they make all the payments?

46) A house sells for $376,500 and a 35% down payment is made.   A 30-year mortgage at 7.5% was obtained.
        a. Determine the down payment.
        b. Determine the amount financed (the principle)
        c. Determine the monthly payment
        d. Determine the total interest paid

47) A house sells for $289,500 and a 25% down payment is made. A 30-year mortgage at 7.5% was obtained. Determine the monthly payment and the total interest paid.

48) A small restaurant was purchased for $464,000 with no down payment and a 7% loan for 15 years. Determine the monthly payment.

49) The Mussleman family agreed on a price of $222,700 for a home. Their company credit union offers a 6.4% 20-year loan with 15% down, resulting in a monthly payment of $1,400.21. Determine the monthly payment for the Mussleman's if they choose a 15-year loan at the same interest rate instead of the 20-year loan. How much money would they save overall?

50) Complete the amortization schedule for the first three months for a $59,000 mortgage with an interest rate of 7% and a monthly payment of $530.41.

Payment Number	Interest	Payment on Principle	Balance of Loan
1			
2			
3			

QR 101:   Unit 4 — Review for Statistics

1. Definitional to enhance your understanding of the concepts in this Unit.

    a. A population consists of _____ .whereas a sample is a _____ .

    b. A researcher is studying possible grade inflation at colleges in Illinois.
        The population is _____ .

    c. A researcher is studying possible grade inflation at colleges in Illinois.
        The sample is _____ .

    d. A ____ sample, is obtained when every subject of the population has an equal chance of being
selected.

    e. A ____ sample is taken by numbering each member of the population and then selecting every kth
member, where k is some natural number.

    f. A ____ sample is obtained when a population is divided into groups where the members of each
group have similar characteristics and a certain number of members from each group are chosen at random.

    g. A ____ sample is obtained when an existing group of subjects that represent the population is used
for a sample.

    h. The arithmetic mean, also known as the arithmetic average, is found by ____ .

    i. To find the ____ arrange the data in order from smallest to largest. If the number of data values is
odd, it will be one value in the middle of the ordered list. If the number of data values is even, it will be the
arithmetic mean of two middle values.

    j. The ____ is the mean of the smallest and largest values in a data set.

    k. The ____ is the value that occurs most often in a data set.   A data set can have multiples.

2. A bookstore recorded the type of books 30 customers purchased during a weekend sale (R = romance novel, S = science fiction, N = nonfiction, C = children's fiction).   Construct a frequency distribution for the data.

```
N  R  R  C  R  S
R  C  C  S  R  R
C  N  N  R  C  S
S  S  R  R  N  C
S  R  R  C  C  N
```

3. The ages of 20 community college students were gathered.   Determine the class width, set up the upper-class and lower-class limits, and construct a frequency distribution for the data using five classes.

22	41	19	15
20	27	18	44
33	44	21	21
15	25	26	15
31	41	17	18

4. As an experiment in a botany class, plants are placed in a greenhouse, and their growth in centimeters after 25 days is recorded, with the results shown below in a stem and leaf plot.

a. How many plants grew to 207 cm?
b. How many plants grew to 36 cm?
c. How many plants had their growth measured and recorded?
d. What was the largest growth recorded for any plant?

Stems	Leaves
1	8
2	0 7
3	3 3 6 6 7
4	1 8 8 9
5	0 1 3 4 4 5 9 9

5. The grades on a college math exam are shown to the right. Construct a stem and leaf plot for the data.

79	79	50
50	70	71
87	89	92
90	80	76
75	87	78

6. Construct a bar graph for the following information.

Eye color	Number
Blue	513
Brown	892
Green	106
Hazel	327

7. Construct a pie chart for the same information.   Determine the degrees in each sector.

number of

8. Fifty people participated in a poll to determine their favorite ice cream flavor. Use the data to construct a bar graph.

Flavor	Number
Chocolate	15
Strawberry	8
Vanilla	13
Other	14

9. Use the same data to construct a pie chart. Determine the number of degrees in each sector.

10. The exam grades of 31 students were used to obtain the frequency distribution below-left. Construct a histogram for the data. Determine the mean for the grouped data.

Class	Frequency
40-49	1
50-59	2
60-69	5
70-79	12
80-89	7
90-99	4

Class	Frequency
0-2	4
3-5	6
6-8	9
9-11	3
12-14	1

11. To obtain the frequency distribution above-right, twenty-three babies were monitored for how many times they cried during the night. Construct a histogram for the data. Determine the mean for the grouped data.

12. These data represent the number of stray cats in a small town for the years listed. Draw a time series graph for the data.

Year	1998	1999	2000	2001	2002	2003
Number	29	38	51	42	45	56

13. These data represent the number of stray dogs in a certain city for the years listed. Draw a time series graph for the data.

Year	1998	1999	2000	2001	2002	2003
Number	5	3	6	8	9	4

14. Determine the mean, median, mode, and midrange for the data provided. The data shows hours spent at work for a group of computer programmers.

NAME	HOURS
Ann	63
Juan	59
Sean	59
Vicky	57
Chan	49
Jacques	44
Peggy	40
Robert	33

15. The table below lists the average high temperature in degrees Fahrenheit for each month of the year on an island in the south Pacific. Determine the mean, median, and mode.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High	82	83	83	84	86	85	87	87	87	84	86	83

16. Provided below are the sizes of 15 farms, in acres, randomly selected from Oregon.

3,200	95	474	309	190	279	188	446
499	204	103	536	542	474	411	

a. Determine the mean and median of the sample and compare them; discuss the difference.
b. Determine the mean and median if you remove the 3,200-acre farm. What does this tell you?

17. These data represent the grades on a college exam. Determine the mean based on the grouped data.
Construct a histogram of the data.

Class limits	Frequency
50-59	3
60-69	8
70-79	10
80-89	13
90-99	9

18. Forty new automobiles were tested for fuel efficiency by the Environmental Protection Agency (miles per gallon). The individual values are displayed below. Calculate the true mean.

23	19	22	30	16	28	26	33	25	18
29	24	33	27	30	26	27	10	33	33
24	28	13	21	23	21	28	25	23	30
20	25	30	19	33	26	16	25	28	18

A grouped frequency distribution using six classes of the same data is shown below.
Use the grouped frequency distribution to construct a histogram and calculate the mean from this grouped frequency data.
Discuss the difference between the two "means."

Class	Frequency
8-12	1
13-17	3
18-22	8
23-27	14
28-32	9
33-37	5

19. Consider the below grading structure for a course:

    Homework: 10%
    Four tests: 30%
    Final Exam: 40%
    Group Project: 20%

    Ann had an 87% homework average, got 57%, 83%, 84%, and 94% on the four tests, 87% on the final exam, and 94% on the group project. Use the weighted mean for grouped data to determine Ann's average for the course.

20. Turned around slightly differently.   Consider the grading structure for a course:

    Homework: 30 points
    Three tests: 30 points each
    Final exam: 50 points
    Attendance/Participation: 10 points

    Sue had an 85% homework average, got 55%, 87%, and 93%, on the three tests, 86% on the final exam, and 100% of attendance/participation points. Use the weighted mean for grouped data to determine Sue's average for the course.

21. If a student's rank in a class of 500 students is 35, determine the student's percentile rank.

22. Howard scored in the 65th percentile rank on an exam.   If 400 students took the exam, how many students scored lower than Howard?

23. Paul scored in the 15th percentile rank on an exam.   If 300 students took the exam, how many students scored lower than Paul?

24. A university finished the season ranked seventh out of 118 teams in football and tenth out of 297 teams in baseball. Calculate the percentile rank of each. Based on percentile rank, which team had the better ranking?
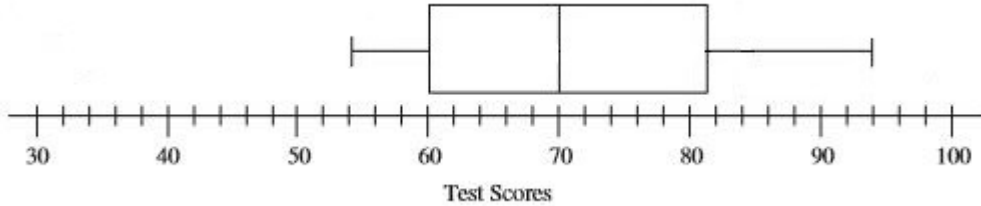
25. Determine Q_1, Q_2, and Q_3 for the ages of nine students.
       18   20   21   19   17   36   22   19   24

26. The data below are the number of cattle on farms in the United States (in millions) for each year that begins a decade from 1910 to 2010. Determine the five-number summary, upper-fence, lower-fence and then draw a box plot for the data. Are there any outliers? If so, what are they? How does the mean compare with the median in terms of skew?

1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010
58	71	64	70	80	74	116	114	86	88	85

27. Use the box plot to fill in all the requested information for the test scores it illustrates.

Test Scores

Lowest Score (Min) _____   Third Quartile _____
First Quartile _____   Highest Score (Max) _____
Median _____   Interquartile Range _____

28. Given the following information about test scores, draw a box plot for the data.

Lowest Score: 34   Third Quartile: 72
First Quartile: 52   Highest Score: 86
Median: 62   Interquartile Range: 20

Then calculate and mark the lower-fence and upper-fence for showing outliers

29. Draw a scatter plot and describe the relationship.

x	10	8	7	12	14	5
y	20	19	17	25	28	9

30. Use a scatter plot to determine the relationship between the x values and the y values.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Money spent on pets $Billion (Source Bureau of Economic Analysis)	39.7	41.9	44.6	46.8	49.8	53.1	56.9	64.8	65.7	67.1
Per capita consumption of whole milk Gallons (source USDA)	7.7	7.4	7.3	7.2	7	6.6	6.5	6.1	5.9	5.7

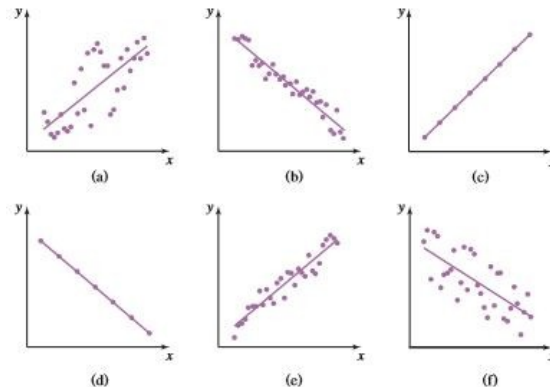31. . For the data above, the equation of the line of best fit (regression line) is
$$y = -0.0667x + 10.279$$
Estimate the r-value and use this equation to predict the amount of milk (y) when we spend $60B on pets (x = 60).

32. Match each value of r with the appropriate   graph and describe each linear relationship.

(a)   (b)   (c)
(d)   (e)   (f)

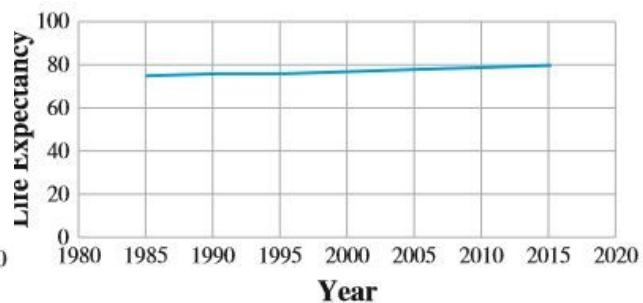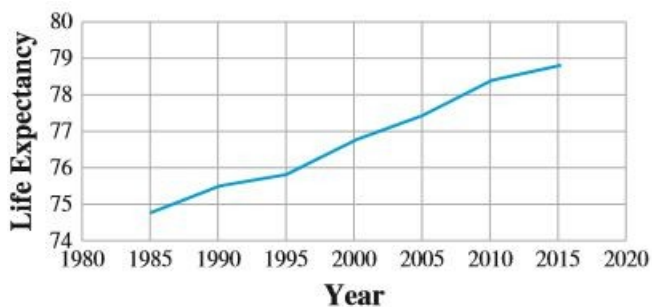| r = -1	
r = -0.9	
r = -0.5	
r = 0.5	
r = 0.9	
r = 1	

33. Consider the survey question "Are you going to vote for Candidate Jones, even though the latest survey shows he will lose the election?" Why do you think the question is a poor one?

34. Consider the survey question "Are you in favor of a national health program and do you think it should be subsidized by a special tax as opposed to other ways to finance it, such as a national lottery?" Why do you think the question is a poor one?

35. Consider the survey question "Do you feel that it is not appropriate to have areas where people cannot smoke?" Why do you think the question is a poor one?

36. An upcoming school levy in my town would raise the property taxes on a $170,000 home from $248 per month to $280 per month. Calculate the annual increase and the percent increase, then pick which one of these numbers would most likely be publicized by an advocacy group that opposes the tax increase.

37. A stats instructor has recorded the scores of a recent quiz worth 20 possible points below.   Determine the mean, median and mode.

9	17	16	18	15	0	15	16	19	18
19	20	19	15	0	17	18	17	20	19

    a. If he wanted to tell his students the quiz scores were terrible, which measure of central tendency is he likely to use? Give that value in your explanation.
    b. If he wanted to tell them the quiz scores were fantastic, which measure of central tendency is he likely to use? Give that value in your explanation

38. The graphs below display the average life expectancy for Americans according to the National Center for Health Statistics. Which graph would you show if you were arguing that we are really not living much longer than we were back in 1985?   Why?

QR 101:   Unit 8 —Review for Measurements

1) To convert units using _____ , the goal is to multiply by a conversion factor in a way that makes the units we don't want divide out, leaving behind the units we DO want.

2) Convert the following using dimensional analysis.   13,980 feet to miles

3) Convert the following   64 oz to pounds

4) Convert the following   1,200 cm = _____ m

5) Convert the following   51.2 millimeters = _____ inches

6) Ann used a tape measure to section off areas for her vegetable garden.   She measured the section for onions to be 396 inches long.   How many feet long is the section for Ann's onions?

7) Ruth wants to paint the walls in her bedroom.   A gallon of paint will cover 400 ft^2.   She measures the surface to be painted and it is 514,979 in^2.   How many whole gallons of paint will she need? (Remember: we cannot buy a fractional gallon)

8) After moving into a new house, a couple wants to have a concrete patio poured to support a hot tub.   The plans call for a 14-ft by 14-ft slab of concrete 3 inches thick. How many cubic yards of concrete will be needed?

9) Convert the following.   8,759 L = _____ quarts

10) On average, 2,186,000 cubic centimeters of a popular soda pop are consumed worldwide every second. How many kiloliters is that? How many gallons?

11) You are planning a party and expect to need one hundred 8-ounce servings of soda. You can purchase this in cans for $4.99 per 24 can case with 12 ounces per can. The alternative is to buy 2-liter bottles at $1.29 per bottle. Assuming you are going to use cups and ice for both options, determine the cost for each option and decide which is the better buy

12) A chemistry teacher has 1,765 grams of a substance and he wants to separate the substance into 4-oz jars. How many 4-oz jars will he need to purchase?

13) A Jacuzzi was filled with 200 gallons of fresh-water.   The Jacuzzi itself weighs 50 pounds.   If a person who weighs 190 pounds and a person who weighs 130 pounds get into the Jacuzzi, how much is the total weight including the two people, the tub, and the water?

14) Convert the following   40 oz to pounds

15) Convert the following   3,420 kilograms = _____ pounds

16) Convert the following Celsius temperature to an equivalent Fahrenheit temperature.   9°C

17) Convert the following Fahrenheit temperature to an equivalent Celsius temperature.   – 18°F

18) Determine the surface area and volume of the rectangular solid that is 8 ft by 5 ft by 9 ft.

19) Determine the surface area and volume of a cylinder that is 6 inches in diameter and 1 foot tall.

20) Determine the volume, surface area, and ratio of volume to surface area for a container that measures 8 ft by 6 ft by 14 ft.

21) Determine the volume, surface area, and volume to surface area ratio of a can that is 4.85 cm. high with a radius of 1.2 cm.

22) A chemical company needs to paint twenty-five chemical tanks including the top and the bottom of the tanks. Each tank has a height of 9 feet and a diameter of 8 feet.   Paint can be purchased in 1-gallon cans or in 5-gallon buckets that cost the same as four 1-gallon cans. Each gallon of paint will cover 350 square feet. How many of each should be purchased to paint two coats on each tank and keep the cost of painting the tanks as low as possible?

Solve. Remember to insert units in your answer.
23) A bottle weighs 84 grams; Determine the weight in kilograms of 35 bottles.

24) One box of cookie mix weighs 2.325 kilograms, but 87 grams of this weight is the packaging. Determine the actual weight (excluding packaging) of the cookie mix in 5 boxes.

25) A painting in a museum is 140 centimeters wide. Convert this width to inches.

26) The pitch was clocked at 50 miles per hour. Convert this to kilometers per hour and feet per second. Round each answer to the nearest tenth, if necessary.

27) The distance between two cities is 392 kilometers. Convert this to miles.

28) A high school student created a remote-control car that can travel 66 feet in 6 seconds.   How fast is this in miles per hour?   How fast is this in kilometers per hour?

29) On the back roads in the mountains, a motorcycle drove 95 miles in 3 hours, how long will it take to travel 130 miles under similar conditions?

Fill in the blank "More Than" or "Less Than".

30) A centimeter is _____ an inch.

31) A foot is _____ a meter.

32) A yard is _____ a meter.

33) A kilogram weighs _____ a pound.

34) An ounce weighs _____ a gram.

35) A liter is _____ a quart.

36) A gallon is _____ a liter.

Solve. Remember to insert units when writing your answer.

37) The standard dose of medicine for a dog is 10 grams for every 15 pounds of body weight. What is the standard dose for a dog that weighs 115 pounds?

38) If 2 ft 9 in. of material is used to manufacture one scarf, how many feet of material should be purchased for 7 scarves?   If the cost is $7.89 per yard (you must purchase in full yards), how much does the material cost for this project?

39) The two sticks used to make a kite have lengths of 1.1 m and 54 cm. What total length (in whole meters) of wood must be ordered for the sticks if 15 kites are to be built?   If the bamboo sticks you want to use is sold by the meter for $1.25 per meter, how much does this project cost?

40) A rectangular fence is to be installed around a garden 12 feet 6 inches long by 15 feet 8 inches wide. What is the total length of fencing (to the foot) needed to enclose the garden?   If the fence can be purchased in 6 ft sections for $34.88 per section, how many sections of fence are needed and what is the total cost before taxes?

41) Daniel is tiling a floor in a new building. He uses rectangular tiles which have a length of 25.6 cm. Along one wall he uses 128 tiles placed end to end. What is the length of the wall in meters?

42) Tina is preparing to run a marathon. Today, for training, she will run 20 kilometers. How many miles is this?

43) A bag of fertilizer covers 2000 square feet of lawn. Determine how many bags of fertilizer should be purchased to cover a rectangular lawn which measures 130 feet by 80 feet.

44) A contractor wants to order concrete for a wall that is 20 ft long, 8 ft high, and 4 inches thick. How many cubic yards should she order? How much will it cost if concrete is sold at $115 per cubic yard?