**FOM 12 Review Of Awesomeness**

**Multiple Choice**

*Identify the choice that best completes the statement or answers the question.*

**\_\_\_\_ 1.** Determine the interest earned on a simple interest investment with a 15-year term at 5.7% on a deposit of $25 000.

|  |  |
| --- | --- |
| **A.** | $21 250 |
| **B.** | $22 500 |
| **C.** | $22 125 |
| **D.** | $21 375 |

**\_\_\_\_ 2.** Determine the interest earned on a simple interest investment where 2.3% interest is paid daily for 1 year on $500.

|  |  |
| --- | --- |
| **A.** | $230 |
| **B.** | $1150 |
| **C.** | $23 |
| **D.** | $11.50 |

**\_\_\_\_ 3.** Sokka invested $500 for 3 years. At the investment’s maturity, its value was $578. What was the annual simple interest rate?

|  |  |
| --- | --- |
| **A.** | 5.2% |
| **B.** | 4.4% |
| **C.** | 6.2% |
| **D.** | 5.8% |

**\_\_\_\_ 4.** Aster invested $790 for 5 years. At the investment’s maturity, its value was $1090.20. What was the annual simple interest rate?

|  |  |
| --- | --- |
| **A.** | 9.7% |
| **B.** | 9.1% |
| **C.** | 8.4% |
| **D.** | 7.6% |

**\_\_\_\_ 5.** Rosa invested $600 at 3.9% simple interest. At the investment’s maturity, its value was $1302. How long was the money invested?

|  |  |
| --- | --- |
| **A.** | 25 years |
| **B.** | 30 years |
| **C.** | 35 years |
| **D.** | 40 years |

**\_\_\_\_ 6.** Devon invested $270 at 1.95% simple interest. At the investment’s maturity, its value was $364.77. How long was the money invested?

|  |  |
| --- | --- |
| **A.** | 11 years |
| **B.** | 14 years |
| **C.** | 18 years |
| **D.** | 17 years |

**\_\_\_\_ 7.** How many compounding periods are there for $1000 invested for 6 years at 4.2% compounded semi-annually?

|  |  |
| --- | --- |
| **A.** | 6 |
| **B.** | 12 |
| **C.** | 42 |
| **D.** | 6000 |

**\_\_\_\_ 8.** How many compounding periods are there for $850 invested for 10 years at 4.75% compounded quarterly?

|  |  |
| --- | --- |
| **A.** | 2.5 |
| **B.** | 10 |
| **C.** | 30 |
| **D.** | 40 |

**\_\_\_\_ 9.** How many compounding periods are there for $2200 invested for 3.5 years at 3.5% compounded monthly?

|  |  |
| --- | --- |
| **A.** | 6 |
| **B.** | 12 |
| **C.** | 42 |
| **D.** | 60 |

**\_\_\_\_ 10.** Determine the future value and the total interest earned for the investment.

|  |  |  |  |
| --- | --- | --- | --- |
| **Principal (*P*) ($)** | **Compound Interest Rate per Annum (%)** | **Compounding Frequency** | **Term** |
| 16 000 | 5.4 | monthly | 4.5 years |

|  |  |
| --- | --- |
| **A.** | $20 389.98; $4389.98 |
| **B.** | $19 848.02; $3848.02 |
| **C.** | $20 398.53; $4398.53 |
| **D.** | $20 956.50; $4956.50 |

**\_\_\_\_ 11.** Determine the future value and the total interest earned for the investment.

|  |  |  |  |
| --- | --- | --- | --- |
| **Principal (*P*) ($)** | **Compound Interest Rate per Annum (%)** | **Compounding Frequency** | **Term** |
| 50 | 0.9 | weekly | 6 months |

|  |  |
| --- | --- |
| **A.** | $50.23; $0.23 |
| **B.** | $50.20; $0.20 |
| **C.** | $50.18; $0.18 |
| **D.** | $50.27; $0.27 |

**\_\_\_\_ 12.** Use the Rule of 72 to estimate the investment’s doubling time and then determine the actual doubling time.

|  |  |  |  |
| --- | --- | --- | --- |
| **Principal (*P*) ($)** | **Compound Interest Rate per Annum (%)** | **Compounding Frequency** | **Term** |
| 5000 | 4.5 | monthly | 5 years |

|  |  |
| --- | --- |
| **A.** | 16 years; 15.43 years |
| **B.** | 16 years; 15.57 years |
| **C.** | 16 years; 15.89 years |
| **D.** | 16 years; 15.73 years |

**\_\_\_\_ 13.** Determine the present value of a 10-year GIC with an interest rate of 5.6%, compounded monthly, if the future value is $10 000.

|  |  |
| --- | --- |
| **A.** | $5769.74 |
| **B.** | $5719.54 |
| **C.** | $5662.89 |
| **D.** | $5744.47 |

**\_\_\_\_ 14.** Determine the present value of a 2-year GIC with an interest rate of 2%, compounded annually, if the future value is $1326.51.

|  |  |
| --- | --- |
| **A.** | $1200 |
| **B.** | $1250 |
| **C.** | $1275 |
| **D.** | $1300 |

**\_\_\_\_ 15.** A $6000 investment grows to $7351.81 in 5.5 years. If the investment has interest compounded monthly, determine the interest rate.

|  |  |
| --- | --- |
| **A.** | 3.7% |
| **B.** | 3.5% |
| **C.** | 3.3% |
| **D.** | 3.2% |

**\_\_\_\_ 16.** Determine the term of a $39 000 investment with an interest rate of 2.06%, compounded quarterly, if the future value is $52 000.

|  |  |
| --- | --- |
| **A.** | 14 years |
| **B.** | 15 years |
| **C.** | 16 years |
| **D.** | 17 years |

**\_\_\_\_ 17.** A 6-year bond has an interest rate of 4.85%, compounded quarterly, and a future value of $70 000. Determine the ratio of future value to present value.

|  |  |
| --- | --- |
| **A.** | 1.335 |
| **B.** | 1.263 |
| **C.** | 1.438 |
| **D.** | 1.294 |

**\_\_\_\_ 18.** A 10-year bond has an interest rate of 5.5%, compounded annually, and a future value of $1000. Determine the ratio of future value to present value.

|  |  |
| --- | --- |
| **A.** | 1.55 |
| **B.** | 1.63 |
| **C.** | 1.48 |
| **D.** | 1.71 |

**\_\_\_\_ 19.** Determine the future value of weekly payments of $30 into an account that pays 1.75% interest, compounded weekly, for 1 year.

|  |  |
| --- | --- |
| **A.** | $1570.98 |
| **B.** | $1568.20 |
| **C.** | $1573.46 |
| **D.** | $1572.33 |

**\_\_\_\_ 20.** Determine the future value of semi-annual payments of $350 into an account that pays 2.4% interest, compounded semi-annually, for 32 years.

|  |  |
| --- | --- |
| **A.** | $13 556.48 |
| **B.** | $33 413.92 |
| **C.** | $51 952.26 |
| **D.** | $38 830.51 |

**\_\_\_\_ 21.** Determine the regular semi-annual payment required to have $10 000 at the end of 10 years if the investment earns 4.25% interest, compounded semi-annually.

|  |  |
| --- | --- |
| **A.** | $392.07 |
| **B.** | $406.47 |
| **C.** | $373.05 |
| **D.** | $386.91 |

**\_\_\_\_ 22.** Regular semi-annual payments of $400 are deposited into an account paying 6.15% interest, compounded semi-annually. If the final value of the account is $46 000, how long was the money invested?

|  |  |
| --- | --- |
| **A.** | 26.84 years |
| **B.** | 25.33 years |
| **C.** | 24.96 years |
| **D.** | 24.17 years |

**\_\_\_\_ 23.** For 16 years, regular monthly payments of $250 are deposited into an account that compounds interest monthly. If the final value of the account is $60 000, what was the interest rate?

|  |  |
| --- | --- |
| **A.** | 2.71% |
| **B.** | 2.84% |
| **C.** | 2.76% |
| **D.** | 2.80% |

**\_\_\_\_ 24.** For 3 years, regular weekly payments of $50 are deposited into an account that compounds interest weekly. If the final value of the account is $8600, what was the interest rate?

|  |  |
| --- | --- |
| **A.** | 6.51% |
| **B.** | 6.43% |
| **C.** | 6.23% |
| **D.** | 6.45% |

**\_\_\_\_ 25.** For 1 year, regular daily payments of $2 are deposited into an account that compounds interest daily. If the final value of the account is $750, what was the interest rate?

|  |  |
| --- | --- |
| **A.** | 5.4% |
| **B.** | 6.4% |
| **C.** | 6.2% |
| **D.** | 5.8% |

**\_\_\_\_ 26.** This portfolio was started 3 years ago. What is the current value of the portfolio?

• A $1200 GIC that earns 2.65%, compounded quarterly

• Monthly deposits of $250 into an account earning 1.75%, compounded monthly

|  |  |
| --- | --- |
| **A.** | $10 532.48 |
| **B.** | $10 780.55 |
| **C.** | $11 021.88 |
| **D.** | $11 235.58 |

**\_\_\_\_ 27.** This portfolio was started 10 years ago. What is the current value of the portfolio?

• A $1200 GIC that earns 2.65%, compounded quarterly

• Monthly deposits of $250 into an account earning 1.75%, compounded monthly

|  |  |
| --- | --- |
| **A.** | $35 945.21 |
| **B.** | $32 578.18 |
| **C.** | $33 500.69 |
| **D.** | $34 321.78 |

**\_\_\_\_ 28.** This portfolio was started 17 years ago. What is the portfolio’s current rate of return?

• A 17-year $25 000 bond earning 7.25%, compounded semi-annually

• Quarterly deposits of $300 into an account averaging 4.7%, compounded quarterly

|  |  |
| --- | --- |
| **A.** | 152.5% |
| **B.** | 161.4% |
| **C.** | 153.0% |
| **D.** | 159.7% |

**\_\_\_\_ 29.** Gila took out a loan from the bank to buy a new car that costs $22 500. The bank offered her a simple interest rate of 4.3%. The loan is to be repaid in 5 years. What amount did Gila need to pay back?

|  |  |
| --- | --- |
| **A.** | $27 771.80 |
| **B.** | $27 337.50 |
| **C.** | $23 467.50 |
| **D.** | $22 500.00 |

**\_\_\_\_ 30.** Carmen must now pay $9000 to pay off her bank loan, which she borrowed 10 years ago. The loan was compounded monthly at an interest rate of 5.2%. How much did Carmen originally borrow?

|  |  |
| --- | --- |
| **A.** | $15 121.25 |
| **B.** | $5421.07 |
| **C.** | $5356.70 |
| **D.** | $5921.05 |

**\_\_\_\_ 31.** Carlos was approved for a mortgage to finance his new house that he purchased for $325 000. He made a down payment that was 20% of the purchase price. The mortgage is compounded semi-annually at an interest rate of 4.2%. Carlos will repay the mortgage in 25 with regular monthly payments. How much will each monthly payment be?

|  |  |
| --- | --- |
| **A.** | $1744.98 |
| **B.** | $1395.99 |
| **C.** | $1401.25 |
| **D.** | $1751.56 |

**\_\_\_\_ 32.** Carlos was approved for a mortgage to finance his new house that he purchased for $325 000. He made a down payment that was 20% of the purchase price. The mortgage is compounded semi-annually at an interest rate of 4.2%. Carlos will repay the mortgage in 25 with regular monthly payments. How much interest will he have to pay?

|  |  |
| --- | --- |
| **A.** | $93 796.24 |
| **B.** | $198 495.30 |
| **C.** | $158 796.24 |
| **D.** | $160 375.01 |

**\_\_\_\_ 33.** Dante wants to buy a truck that costs $35 000 and he has a two different options to finance the purchase.

Option A: Finance the purchase through the dealership by making regular weekly payments for 4 years at an interest rate of 5.0%, compounded daily.

Option B: Finance the purchase with a bank loan by making regular monthly payments for 4 years at an interest rate of 5.0%, compounded daily.

What is the total cost of the cheaper option?

|  |  |
| --- | --- |
| **A.** | $42 744.99 |
| **B.** | $38 634.90 |
| **C.** | $42 731.34 |
| **D.** | $38 696.89 |

**\_\_\_\_ 34.** Catherine wants to travel to England. The trip costs $3000 and she can afford monthly payments of $150. She can finance her trip using one of her two credit cards.

• Card 1 charges 12.7%, compounded daily.

• Card 2 charges 18.1%, compounded daily, but she gets 3% cash back on all purchases.

If Catherine wants to pay off her debt as quick as possible, how many months will it take?

|  |  |
| --- | --- |
| **A.** | 22 |
| **B.** | 23 |
| **C.** | 24 |
| **D.** | 25 |

**\_\_\_\_ 35.** Garrick is purchasing equipment for his job as a builder. The equipment costs $1000 and he wants to make monthly payments of $125. He has two different credit cards that he can use to finance the purchase.

• Card A charges 9.9%, compounded daily, but it also charges a fee of $65 for all purchases over $1000 that is immediately added to the balance.

• Card B charges 13.3%, compounded daily.

What is the total cost of the cheaper option?

|  |  |
| --- | --- |
| **A.** | $1053.24 |
| **B.** | $1109.01 |
| **C.** | $1125.00 |
| **D.** | $1000.00 |

**\_\_\_\_ 36.** Joanna needs to buy textbooks for school that cost $780. She cannot afford them now but she has two different options to finance the cost.

Option A: Get a loan from her friend that must be paid back in 3 months with a $50 fee.

Option B: Use her credit card which charges 18.8%, compounded daily. She plans to make the minimum monthly payment of $10 on the debt for 3 months, then pay off the remaining debt in full.

What annual interest rate does the fee in Option A equate to if you assume the interest compounds monthly?

|  |  |
| --- | --- |
| **A.** | 25.1% |
| **B.** | 25.6% |
| **C.** | 28.2% |
| **D.** | 6.4% |

**\_\_\_\_ 37.** Cormac wants to pay off all his debts in 4 years. He has two credit cards on which he makes monthly payments:

• Card A has a balance of $3002.91 and an interest rate of 17.6%, compounded daily.

• Card B has a balance of $4712.01 and an interest rate of 15.9%, compounded daily.

Cormac wants to consolidate his debts into a line of credit with an interest rate of 8.9%, compounded monthly. If Cormac does not consolidate his debt, what will his combined monthly payments be?

|  |  |
| --- | --- |
| **A.** | $87.78 |
| **B.** | $191.62 |
| **C.** | $221.33 |
| **D.** | $133.55 |

**\_\_\_\_ 38.** Cormac wants to pay off all his debts in 4 years. He has two credit cards on which he makes monthly payments:

• Card A has a balance of $3002.91 and an interest rate of 17.6%, compounded daily.

• Card B has a balance of $4712.01 and an interest rate of 15.9%, compounded daily.

Cormac wants to consolidate his debts into a line of credit with an interest rate of 8.9%, compounded monthly. If Cormac consolidates his debt, what will his monthly payments be?

|  |  |
| --- | --- |
| **A.** | $117.11 |
| **B.** | $191.74 |
| **C.** | $221.33 |
| **D.** | $74.63 |

**\_\_\_\_ 39.** Cormac wants to pay off all his debts in 4 years. He has two credit cards on which he makes monthly payments:

• Card A has a balance of $3002.91 and an interest rate of 17.6%, compounded daily.

• Card B has a balance of $4712.01 and an interest rate of 15.9%, compounded daily.

Cormac wants to consolidate his debts into a line of credit with an interest rate of 8.9%, compounded monthly. How much will Cormac save by consolidating his debts?

|  |  |
| --- | --- |
| **A.** | $1420.32 |
| **B.** | $29.59 |
| **C.** | $1488.46 |
| **D.** | $2908.70 |

**\_\_\_\_ 40.** Yu needs a car. He can lease a car for 3 years for $300 per month and a down payment of $4100. He can purchase a new car for $28 000, which would be financed with a bank loan at an interest rate of 5.2%, compounded monthly, and a down payment of $3700. He would pay off this loan with regular monthly payments. He can also rent a car at $75 per day. What is the total cost of renting the car for 3 years?

|  |  |
| --- | --- |
| **A.** | $27 375 |
| **B.** | $86 225 |
| **C.** | $54 750 |
| **D.** | $82 125 |

**\_\_\_\_ 41.** A company replaces its trucks after the trucks have been used for 8 years. The company uses a depreciation rate of 35%. If after 3 years of use a truck is worth $27 000, what was the truck worth when it was purchased?

|  |  |
| --- | --- |
| **A.** | $98 315.89 |
| **B.** | $81 000.00 |
| **C.** | $629 737.61 |
| **D.** | $232 700.32 |

**\_\_\_\_ 42.** Nigel is purchasing a house for $225 000 that appreciates at a rate of about 3% per year. He will finance this purchase with a 20-year mortgage at an interest rate of 4.5%, compounded semi-annually, with monthly payments, where he is required to make a 15% down payment. How much does he pay monthly?

|  |  |
| --- | --- |
| **A.** | $1418.41 |
| **B.** | $1058.89 |
| **C.** | $1205.65 |
| **D.** | $922.46 |

**\_\_\_\_ 43.** Johanna needs a place to live. She can either rent an apartment or buy a new house. Renting costs $300 per week. She can finance the purchase of a house that costs $280 000 with a mortage. She has negotiated with the bank a mortgage of 87% of the purchase price at an interest rate of 3.9%, compounded semi-annually. The term of the mortgage is 15 years and it requires regular monthly payments. The house depreciates at a rate of 4%. If she purchases the house, what will her regular monthly payments be?

|  |  |
| --- | --- |
| **A.** | $1200.00 |
| **B.** | $2052.75 |
| **C.** | $3796.61 |
| **D.** | $1785.89 |

**\_\_\_\_ 44.** Jasmine needs a car. She has two different options. She can rent a car for $225 per month for three years. She can also buy a new car for $21 000. She will finance the purchase through the dealership by making regular monthly payments over 9 years at an interest rate of 4.9%, compounded monthly. If she purchases the car, she will sell it after three years at market value. The car depreciates at a rate of 25%. In both options, she must make a down payment of $1200. What is the total cost of the cheaper option?

|  |  |
| --- | --- |
| **A.** | $9300.00 |
| **B.** | $14 657.02 |
| **C.** | $9375.17 |
| **D.** | $8100.00 |

**\_\_\_\_ 45.** Vito needs a truck. He has two different options. He can lease a car for $45 per week for four years. He can also buy a new truck for $33 000. He will finance the purchase through the dealership by making regular monthly payments over 8 years at an interest rate of 3.4%, compounded monthly. If he purchases the truck, he will sell it after four years at market value. The truck depreciates at a rate of 20%. In both options, he must make a down payment of $2500. What is the total cost of the cheaper option?

|  |  |
| --- | --- |
| **A.** | $22 706.51 |
| **B.** | $9360.00 |
| **C.** | $11 860.00 |
| **D.** | $17 439.37 |

**\_\_\_\_ 46.** What is the meaning of *disjoint* in set theory?

|  |  |
| --- | --- |
| **A.** | two or more sets having no elements in common |
| **B.** | two or more sets that do not match |
| **C.** | sets that are in different universal sets |
| **D.** | sets that contain no elements |

**\_\_\_\_ 47.** What is the universal set?

|  |  |
| --- | --- |
| **A.** | a set with an infinite number of elements |
| **B.** | a set of all the elements under consideration for a particular context |
| **C.** | a set with a countable number of elements |
| **D.** | a set that contains every possible element |

**\_\_\_\_ 48.** Rahim described the set as follows:

• *M* = {all of the foods he eats}

• *D* = {his favourite desserts}

• *V* = {his favourite vegetables}

• *F* = {his favourite fruits}

Assume Rahim likes some fruit for dessert. Which statement is true?

|  |  |
| --- | --- |
| **A.** | The universal set is *D*, Rahim’s favourite desserts. |
| **B.** | Set *F* is a subset of *D*. |
| **C.** | Set *D* is a subset of *V*. |
| **D.** | Set *M* and set *V* are mutually exclusive. |

**\_\_\_\_ 49.** Which Venn diagram correctly represents the situation described?

Rahim described the set as follows:

• *M* = {all of the foods he eats}

• *D* = {his favourite desserts}

• *V* = {his favourite vegetables}

• *F* = {his favourite fruits}

Assume Rahim likes some fruit for dessert.

|  |  |
| --- | --- |
| **A.** |  |
| **B.** |  |
| **C.** |  |
| **D.** |  |

**\_\_\_\_ 50.** Given the following situation:

• the universal set *U* = {positive integers less than 20}

• *X* = {4, 5, 6, 7, 8}

• *P* = {prime numbers of *U*}

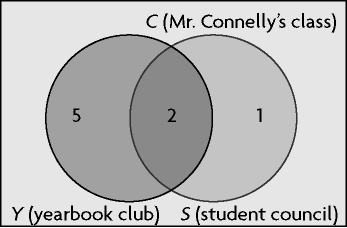
• *O* = {odd numbers of *U*}

Which is the complement of *P*?

|  |  |
| --- | --- |
| **A.** | the even numbers of *U* |
| **B.** | the universal set excluding the set of *X* |
| **C.** | the positive integers greater than 20 |
| **D.** | the non-prime numbers of *U* |

**\_\_\_\_ 51.** There are 28 students in Mr. Connelly’s Grade 12 mathematics class.

The number of students in the yearbook club and the number of students on student council are shown in the Venn diagram. Use the diagram to answer the following questions.

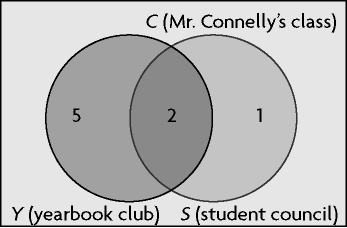
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How many students are in the yearbook club but not on student council?

|  |  |
| --- | --- |
| **A.** | 2 |
| **B.** | 5 |
| **C.** | 1 |
| **D.** | 7 |

**\_\_\_\_ 52.** There are 28 students in Mr. Connelly’s Grade 12 mathematics class.

The number of students in the yearbook club and the number of students on student council are shown in the Venn diagram. Use the diagram to answer the following questions.

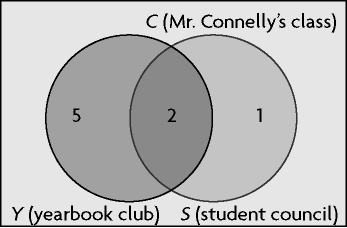
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How many students are in at least one of the yearbook club or on student council?

|  |  |
| --- | --- |
| **A.** | 2 |
| **B.** | 5 |
| **C.** | 8 |
| **D.** | 7 |

**\_\_\_\_ 53.** There are 28 students in Mr. Connelly’s Grade 12 mathematics class.

The number of students in the yearbook club and the number of students on student council are shown in the Venn diagram. Use the diagram to answer the following questions.

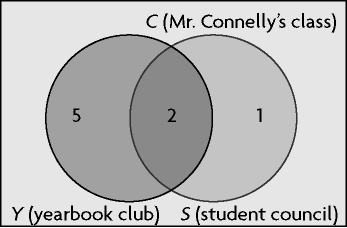
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How many students are on the student council but not in the yearbook club?

|  |  |
| --- | --- |
| **A.** | 2 |
| **B.** | 5 |
| **C.** | 1 |
| **D.** | 7 |

**\_\_\_\_ 54.** There are 28 students in Mr. Connelly’s Grade 12 mathematics class.

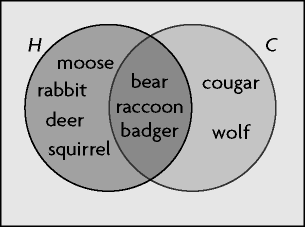
The number of students in the yearbook club and the number of students on student council are shown in the Venn diagram. Use the diagram to answer the following questions.

****

How many students are neither in the yearbook club nor on student council?

|  |  |
| --- | --- |
| **A.** | 2 |
| **B.** | 5 |
| **C.** | 1 |
| **D.** | 20 |

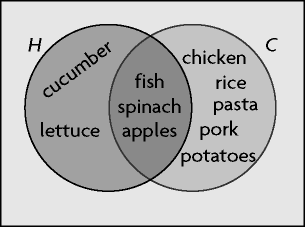
**\_\_\_\_ 55.** Consider the following Venn diagram of herbivores and carnivores:



Determine *H*  *C*.

|  |  |
| --- | --- |
| **A.** | {moose, rabbit, deer, squirrel} |
| **B.** | {bear, raccoon, badger} |
| **C.** | {cougar, wolf} |
| **D.** | {moose, rabbit, deer, squirrel, bear, raccoon, badger, cougar, wolf} |

**\_\_\_\_ 56.** Consider the following Venn diagram of foods we eat raw or cooked:



Determine *H*  *C*.

|  |  |
| --- | --- |
| **A.** | {fish, spinach, apples, cucumber, lettuce, chicken, pork, rice, pasta, potatoes} |
| **B.** | {chicken, pork, rice, pasta, potatoes} |
| **C.** | {cucumber, lettuce} |
| **D.** | {fish, spinach, apples} |

**\_\_\_\_ 57.** Consider the following two sets:

• *C* = {–10, –8, –6, –4, –2, 0, 2, 4, 6, 8, 10}

• *B* = {–9, –6, –3, 0, 3, 6, 9, 12}

Determine *n*(*C*  *B*).

|  |  |
| --- | --- |
| **A.** | 3 |
| **B.** | 8 |
| **C.** | 11 |
| **D.** | 19 |

**\_\_\_\_ 58.** Consider the following two sets:

• *A* = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12}

• *B* = {–9, –6, –3, 0, 3, 6, 9, 12}

Determine *A*  *B*.

|  |  |
| --- | --- |
| **A.** | {–9, –6, –3, 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12} |
| **B.** | {0, 1, 2, –3, 4, 5, –6, 7, 8, –9, 10, 11, 12} |
| **C.** | {1, 2, 4, 5, 7, 8, 10, 11} |
| **D.** | {–9, –6, –3, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12} |

**\_\_\_\_ 59.** Consider the following two sets:

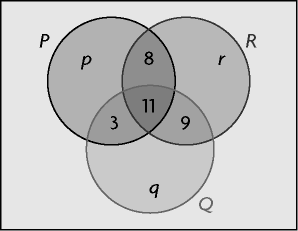
• *C* = {–10, –8, –6, –4, –2, 0, 2, 4, 6, 8, 10}

• *B* = {–9, –6, –3, 0, 3, 6, 9, 12}

Determine *C*  *B*.

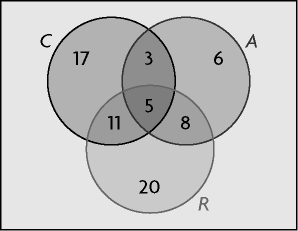
|  |  |
| --- | --- |
| **A.** | {3, 6, 9, 12} |
| **B.** | {–6, 0, 6} |
| **C.** | {0} |
| **D.** | {–6, 0, 6, 12} |

**\_\_\_\_ 60.** The three circles in the Venn diagram (*P*, *Q*, and *R* ) contain the same number of elements. Which set of values is true for *p*, *q*, and *r*?



|  |  |
| --- | --- |
| **A.** | *p* = 11, *q* = 11, *r* = 5 |
| **B.** | *p* = 7, *q* = 8, *r* = 2 |
| **C.** | *p* = 7, *q* = 6, *r* = 1 |
| **D.** | *p* = 14, *q* = 13, *r* = 7 |

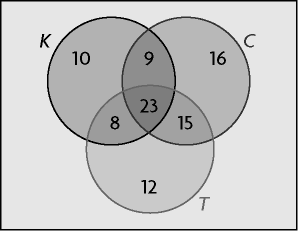
**\_\_\_\_ 61.** A summer camp offers canoeing, rock climbing, and archery. The following Venn diagram shows the types of activities the campers like.



Use the diagram to determine *n*((*R*  *A*) \ *C*).

|  |  |
| --- | --- |
| **A.** | 14 |
| **B.** | 5 |
| **C.** | 26 |
| **D.** | 8 |

**\_\_\_\_ 62.** A restaurant offers Chinese, Thai, and Korean food. The following Venn diagram shows the types of food the customers like.



Use the diagram to determine *n*(*C*  *T*).

|  |  |
| --- | --- |
| **A.** | 53 |
| **B.** | 15 |
| **C.** | 40 |
| **D.** | 83 |

**\_\_\_\_ 63.** What is a converse?

|  |  |
| --- | --- |
| **A.** | proof that a conditional statement is false |
| **B.** | a conditional statement in which the hypothesis and the conclusion are switched |
| **C.** | the second part of a conditional statement |
| **D.** | the opposite of a conditional statement |

**\_\_\_\_ 64.** Which sentence is the converse to the conditional statement below?

“If students are in school, then it is a weekday.”

|  |  |
| --- | --- |
| **A.** | If it is a weekday, then students are in school. |
| **B.** | If it is not a weekday, then students are not in school. |
| **C.** | During the week, students are in school. |
| **D.** | Students go to school on weekdays. |

**\_\_\_\_ 65.** Which truth tables apply to the conditional statement below and its converse?

“If *x* = *y*, then *y* = *x*.”

A. C.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***p*** | ***q*** | ***p*  *q*** |  | ***p*** | ***q*** | ***p*  *q*** |
| T | F | F |  | T | T | F |
| ***q*** | ***p*** | ***q*  *p*** |  | ***q*** | ***p*** | ***q*  *p*** |
| F | F | F |  | T | F | T |

B. D.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***p*** | ***q*** | ***p*  *q*** |  | ***p*** | ***q*** | ***p*  *q*** |
| T | T | T |  | T | F | T |
| ***q*** | ***p*** | ***q*  *p*** |  | ***q*** | ***p*** | ***q*  *p*** |
| T | T | T |  | T | F | F |

|  |  |
| --- | --- |
| **A.** | A. |
| **B.** | B. |
| **C.** | C. |
| **D.** | D. |

**\_\_\_\_ 66.** Which conditional statement is false?

|  |  |
| --- | --- |
| **A.** | If today is Labour Day, then it is November 3. |
| **B.** | If it is October, then students are in school. |
| **C.** | If today is Friday, then tomorrow is Saturday. |
| **D.** | If there is deep snow outside, then the outside temperature is below freezing. |

**\_\_\_\_ 67.** Which conditional statement is false?

|  |  |
| --- | --- |
| **A.** | 12 o’clock is midnight if and only if it is not noon. |
| **B.** | It is real maple syrup if and only if the syrup is made from maple sap. |
| **C.** | It is Valentine’s Day if and only if it is February 14. |
| **D.** | It is a whale if and only if is it a mammal that lives in the ocean. |

**\_\_\_\_ 68.** What is the inverse?

|  |  |
| --- | --- |
| **A.** | a conditional statement in which the hypothesis and the conclusion are switched |
| **B.** | a statement that is formed by negating both the hypothesis and the conclusion of a conditional statement |
| **C.** | a statement that is formed by negating both the hypothesis and the conclusion of the converseof a conditional statement |
| **D.** | a statement that is formed by inverting both the hypothesis and the conclusion of a conditional statement |

**\_\_\_\_ 69.** Which statement is true?

|  |  |
| --- | --- |
| **A.** | If a conditional statement is true, then its contrapositive is true, and vice versa. |
| **B.** | If a conditional statement is true, then its converse is true, and vice versa. |
| **C.** | If the inverse of a conditional statement is true, then the contrapositive of the statement is also true, and vice versa. |
| **D.** | If the contrapositive of a conditional statement is true, then the converse of the statement is also true, and vice versa. |

**\_\_\_\_ 70.** Which statement is true?

|  |  |
| --- | --- |
| **A.** | If the converse of a conditional statement is true, then the contrapositive of the statement is also true, and vice versa. |
| **B.** | If the inverse of a conditional statement is true, then the converse of the statement is also true, and vice versa. |
| **C.** | If a conditional statement is true, then its inverse is true, and vice versa. |
| **D.** | If a conditional statement is true, then its converse is true, and vice versa. |

**\_\_\_\_ 71.** Which statement is the converse of the conditional statement below?

“If tomorrow is Monday, then today is Sunday.”

|  |  |
| --- | --- |
| **A.** | If tomorrow is Sunday, then today is not Monday. |
| **B.** | If today is Sunday, then tomorrow is Monday. |
| **C.** | If tomorrow is not Monday, then today is not Sunday. |
| **D.** | If today is not Sunday, then tomorrow is not Monday. |

**\_\_\_\_ 72.** Which statement is the converse of the conditional statement below?

“If a bird has wings, then the bird can fly.”

|  |  |
| --- | --- |
| **A.** | If a bird does not have wings, then the bird cannot fly. |
| **B.** | If the bird cannot fly, then the bird does not have wings. |
| **C.** | If a bird can fly, then the bird has wings. |
| **D.** | If a bird does not have wings, then the bird can fly. |

**\_\_\_\_ 73.** Which statement is the inverse of the conditional statement below?

“If a balloon is filled with helium, then the balloon will float upwards.”

|  |  |
| --- | --- |
| **A.** | If a balloon floats upwards, then the balloon is filled with helium. |
| **B.** | If a balloon is not filled with helium, then the balloon will not float upwards. |
| **C.** | If a balloon is not filled with helium, then the balloon will float downwards. |
| **D.** | If a balloon does not float upwards, then the balloon is not filled with helium. |

**\_\_\_\_ 74.** Which expression correctly describes the experimental probability, *P*(*B*), where *n*(*B*) is the number of times event B occurred and *n*(*T*) is the total number of trials, *T*, in the experiment?

|  |  |
| --- | --- |
| **A.** |  |
| **B.** |  |
| **C.** |  |
| **D.** |  |

**\_\_\_\_ 75.** Tia notices that yogurt is on sale at a local grocery store. The last eight times that yogurt was on sale, it was available only three times. Determine the odds against yogurt being available this time.

|  |  |
| --- | --- |
| **A.** | 3 : 5 |
| **B.** | 3 : 8 |
| **C.** | 5 : 8 |
| **D.** | 5 : 3 |

**\_\_\_\_ 76.** The odds of Macy passing her driver’s test on the first try are 7 : 4. Determine the probability that she will pass her driver’s test.

|  |  |
| --- | --- |
| **A.** | 0.226 |
| **B.** | 0.364 |
| **C.** | 0.571 |
| **D.** | 0.636 |

**\_\_\_\_ 77.** Raymond has 12 coins in his pocket, and 9 of these coins are quarters. He reaches into his pocket and pulls out a coin at random. Determine the probability of the coin being a quarter.

|  |  |
| --- | --- |
| **A.** | 0.250 |
| **B.** | 0.333 |
| **C.** | 0.750 |
| **D.** | 0.848 |

**\_\_\_\_ 78.** Julie draws a card at random from a standard deck of 52 playing cards. Determine the probability of the card being a diamond.

|  |  |
| --- | --- |
| **A.** | 0.250 |
| **B.** | 0.500 |
| **C.** | 0.625 |
| **D.** | 0.750 |

**\_\_\_\_ 79.** Yvonne tosses three coins. She is calculating the probability that at least one coin will land as heads. Determine the total number of outcomes.

|  |  |
| --- | --- |
| **A.** | 2 |
| **B.** | 4 |
| **C.** | 8 |
| **D.** | 16 |

**\_\_\_\_ 80.** Nine boys and twelve girls have signed up for a trip. Only six students will be selected to go on the trip. Determine the probability that there will be equal numbers of boys and girls on the trip.

|  |  |
| --- | --- |
| **A.** | 17.23% |
| **B.** | 22.61% |
| **C.** | 27.35% |
| **D.** | 34.06% |

**\_\_\_\_ 81.** Nine boys and twelve girls have signed up for a trip. Only six students will be selected to go on the trip. Determine the number of ways in which there can be more girls than boys on the trip.

|  |  |
| --- | --- |
| **A.** | 17 456 |
| **B.** | 25 872 |
| **C.** | 29 778 |
| **D.** | 35 910 |

**\_\_\_\_ 82.** Four boys and three girls will be riding in a van. Only two people will be selected to sit at the front of the van. Determine the probability that there will be equal numbers of boys and girls sitting at the front.

|  |  |
| --- | --- |
| **A.** | 53.07% |
| **B.** | 57.14% |
| **C.** | 59.36% |
| **D.** | 62.23% |

**\_\_\_\_ 83.** Four boys and three girls will be riding in a van. Only two people will be selected to sit at the front of the van. Determine the number of ways in which there can be more girls than boys sitting at the front.

|  |  |
| --- | --- |
| **A.** | 3 |
| **B.** | 4 |
| **C.** | 5 |
| **D.** | 6 |

**\_\_\_\_ 84.** Two dice are rolled. Let *A* represent rolling a sum greater than 10. Let *B* represent rolling a sum that is a multiple of 2. Determine *n*(*A*  *B*).

|  |  |
| --- | --- |
| **A.** | 1 |
| **B.** | 3 |
| **C.** | 11 |
| **D.** | 18 |

**\_\_\_\_ 85.** Select the events that are mutually exclusive.

|  |  |
| --- | --- |
| **A.** | Drawing a 7 or drawing a heart from a standard deck of 52 playing cards. |
| **B.** | Rolling a sum of 4 or rolling an even number with a pair of four-sided dice, numbered 1 to 4. |
| **C.** | Drawing a black card or drawing a Queen from a standard deck of 52 playing cards. |
| **D.** | Rolling a sum of 8 or a sum of 11 with a pair of six-sided dice, numbered 1 to 6. |

**\_\_\_\_ 86.** Select the events that are mutually exclusive.

|  |  |
| --- | --- |
| **A.** | Rolling a sum of 9 or rolling a multiple of 3 with a pair of six-sided dice, numbered 1 to 6. |
| **B.** | Drawing a Jack or drawing a face card from a standard deck of 52 playing cards. |
| **C.** | Walking to school or taking the bus to school. |
| **D.** | Drawing a 2 or drawing a spade from a standard deck of 52 playing cards. |

**\_\_\_\_ 87.** Josie is about to draw a card at random from a standard deck of 52 playing cards. Determine the probability that she will draw a red card or a 7.

|  |  |
| --- | --- |
| **A.** |  |
| **B.** |  |
| **C.** |  |
| **D.** |  |

**\_\_\_\_ 88.** Samuel rolls two regular six-sided dice. Determine the odds against him rolling an even sum or an 8.

|  |  |
| --- | --- |
| **A.** | 1 : 3 |
| **B.** | 25 : 11 |
| **C.** | 21 : 15 |
| **D.** | 1 : 1 |

**\_\_\_\_ 89.** Lorne rolls two regular six-sided dice. Determine the odds against him rolling an odd sum or a 4.

|  |  |
| --- | --- |
| **A.** | 7 : 11 |
| **B.** | 1 : 8 |
| **C.** | 17 : 19 |
| **D.** | 5 : 7 |

**\_\_\_\_ 90.** Sarah draws a card from a well-shuffled standard deck of 52 playing cards. Then she draws another card from the deck without replacing the first card. Determine the probability that both cards are NOT face cards.

|  |  |
| --- | --- |
| **A.** |  |
| **B.** |  |
| **C.** |  |
| **D.** |  |

**\_\_\_\_ 91.** Select the events that are dependent.

|  |  |
| --- | --- |
| **A.** | Drawing a face card from a standard deck of 52 playing cards, putting it back,  and then drawing another face card. |
| **B.** | Rolling a 4 and rolling a 3 with a pair of six-sided dice, numbered 1 to 6. |
| **C.** | Drawing a heart from a standard deck of 52 playing cards, putting it back,  and then drawing another heart. |
| **D.** | Rolling a 3 and having a sum greater than 5 with a pair of six-sided dice, numbered 1 to 6. |

**\_\_\_\_ 92.** Select the events that are dependent.

|  |  |
| --- | --- |
| **A.** | Rolling a 2 and rolling a 5 with a pair of six-sided dice, numbered 1 to 6. |
| **B.** | Drawing an odd card from a standard deck of 52 playing cards, putting it back, and then drawing another odd card. |
| **C.** | Drawing a spade from a standard deck of 52 playing cards and then drawing another spade, without replacing the first card. |
| **D.** | Rolling an even number and rolling an odd number with a pair of six-sided dice, numbered 1 to 6. |

**\_\_\_\_ 93.** Rino has six loonies, four toonies, and two quarters in his pocket. He needs two loonies for a parking meter. He reaches into his pocket and pulls out two coins at random. Determine the probability that both coins are loonies.

|  |  |
| --- | --- |
| **A.** | 16.3% |
| **B.** | 18.4% |
| **C.** | 22.7% |
| **D.** | 25.9% |

**\_\_\_\_ 94.** Rashid goes to the gym and does two different cardio workouts each day. His choices include using a treadmill, a stepper, a stationary bike, an elliptical walker, and running the track. Determine the probability that the next time Rashid goes to the gym he will use the stepper and then run the track.

|  |  |
| --- | --- |
| **A.** | 1% |
| **B.** | 5% |
| **C.** | 8% |
| **D.** | 14% |

**\_\_\_\_ 95.** A four-sided red die and a six-sided green die are rolled. Determine the probability of rolling a 2 on the red die and a 5 on the green die.

|  |  |
| --- | --- |
| **A.** | 4.17% |
| **B.** | 4.89% |
| **C.** | 6.50% |
| **D.** | 8.04% |

**\_\_\_\_ 96.** A four-sided red die and a four-sided green die are rolled. Determine the probability of rolling a 1 on the red die and rolling a 3 on the green die.

|  |  |
| --- | --- |
| **A.** | 0.23% |
| **B.** | 3.09% |
| **C.** | 6.25% |
| **D.** | 10.16% |

**\_\_\_\_ 97.** There are 35 cards, numbered 1 to 35, in a box. Two cards are drawn, one at a time, with replacement. Determine the probability of drawing two multiples of 10.

|  |  |
| --- | --- |
| **A.** | 0.02% |
| **B.** | 0.36% |
| **C.** | 0.73% |
| **D.** | 0.99% |

**\_\_\_\_ 98.** Select the independent events.

|  |  |
| --- | --- |
| **A.** | *P*(*A*) = 0.22, *P*(*B*) = 0.39, and *P*(*A*  *B*) = 0.072 |
| **B.** | *P*(*A*) = 0.18, *P*(*B*) = 0.7, and *P*(*A*  *B*) = 0.163 |
| **C.** | *P*(*A*) = 0.51, *P*(*B*) = 0.1, and *P*(*A*  *B*) = 0.069 |
| **D.** | *P*(*A*) = 0.9, *P*(*B*) = 0.23, and *P*(*A*  *B*) = 0.207 |

**\_\_\_\_ 99.** Select the independent events.

|  |  |
| --- | --- |
| **A.** | *P*(*A*) = 0.67, *P*(*B*) = 0.12, and *P*(*A*  *B*) = 0.086 |
| **B.** | *P*(*A*) = 0.83, *P*(*B*) = 0.4, and *P*(*A*  *B*) = 0.378 |
| **C.** | *P*(*A*) = 0.4, *P*(*B*) = 0.91, and *P*(*A*  *B*) = 0.364 |
| **D.** | *P*(*A*) = 0.2, *P*(*B*) = 0.32, and *P*(*A*  *B*) = 0.046 |

**\_\_\_\_ 100.** There are three children in the Stribling family. Determine the probability that all the children are girls.

|  |  |
| --- | --- |
| **A.** | 12.5% |
| **B.** | 25% |
| **C.** | 37.5% |
| **D.** | 50% |

**FOM 12 Review Of Awesomeness**

**Answer Section**

**MULTIPLE CHOICE**

**1.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 1.1

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest.

TOP: Simple interest KEY: simple interest | principal

**2.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 1.1

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest.

TOP: Simple interest KEY: simple interest | principal

**3.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 1.1

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest.

TOP: Simple interest KEY: simple interest | principal | future value

**4.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 1.1

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest.

TOP: Simple interest KEY: simple interest | principal | future value

**5.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 1.1

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest.

TOP: Simple interest KEY: simple interest | principal | future value

**6.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 1.1

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest.

TOP: Simple interest KEY: simple interest | principal | future value

**7.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 1.3

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest. | 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Compound interest: future value KEY: compound interest | compounding period

**8.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 1.3

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest. | 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Compound interest: future value KEY: compound interest | compounding period

**9.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 1.3

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest. | 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Compound interest: future value KEY: compound interest | compounding period

**10.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 1.3

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest. | 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Compound interest: future value KEY: compound interest | principal | future value

**11.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 1.3

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest. | 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Compound interest: future value KEY: compound interest | principal | future value

**12.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 1.3

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest. | 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Compound interest: future value

KEY: compound interest | principal | future value | Rule of 72

**13.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 1.4

OBJ: 1.2 Identify situations that involve compound interest. | 1.8 Solve a contextual problem that involves compound interest. TOP: Compound interest: present value

KEY: compound interest | future value | present value

**14.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 1.4

OBJ: 1.2 Identify situations that involve compound interest. | 1.8 Solve a contextual problem that involves compound interest. TOP: Compound interest: present value

KEY: compound interest | future value | present value

**15.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 1.4

OBJ: 1.2 Identify situations that involve compound interest. | 1.8 Solve a contextual problem that involves compound interest. TOP: Compound interest: present value

KEY: compound interest | future value | principal

**16.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 1.4

OBJ: 1.2 Identify situations that involve compound interest. | 1.8 Solve a contextual problem that involves compound interest. TOP: Compound interest: present value

KEY: compound interest | future value | principal

**17.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 1.4

OBJ: 1.2 Identify situations that involve compound interest. | 1.8 Solve a contextual problem that involves compound interest. TOP: Compound interest: present value

KEY: compound interest | future value | present value

**18.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 1.4

OBJ: 1.2 Identify situations that involve compound interest. | 1.8 Solve a contextual problem that involves compound interest. TOP: Compound interest: present value

KEY: compound interest | future value | present value

**19.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 1.5

OBJ: 3.2 Determine, using technology, the total value of an investment when there are regular contributions to the principal. | 3.5 Determine, using technology, possible investment strategies to achieve a financial goal. | 3.8 Solve an investment problem.

TOP: Investments involving regular payments

KEY: compound interest | future value

**20.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 1.5

OBJ: 3.2 Determine, using technology, the total value of an investment when there are regular contributions to the principal. | 3.5 Determine, using technology, possible investment strategies to achieve a financial goal. | 3.8 Solve an investment problem.

TOP: Investments involving regular payments

KEY: compound interest | future value

**21.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 1.5

OBJ: 3.2 Determine, using technology, the total value of an investment when there are regular contributions to the principal. | 3.5 Determine, using technology, possible investment strategies to achieve a financial goal. | 3.8 Solve an investment problem.

TOP: Investments involving regular payments

KEY: compound interest | future value

**22.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 1.5

OBJ: 3.2 Determine, using technology, the total value of an investment when there are regular contributions to the principal. | 3.5 Determine, using technology, possible investment strategies to achieve a financial goal. | 3.8 Solve an investment problem.

TOP: Investments involving regular payments

KEY: compound interest | future value

**23.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 1.5

OBJ: 3.2 Determine, using technology, the total value of an investment when there are regular contributions to the principal. | 3.5 Determine, using technology, possible investment strategies to achieve a financial goal. | 3.8 Solve an investment problem.

TOP: Investments involving regular payments

KEY: compound interest | future value

**24.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 1.5

OBJ: 3.2 Determine, using technology, the total value of an investment when there are regular contributions to the principal. | 3.5 Determine, using technology, possible investment strategies to achieve a financial goal. | 3.8 Solve an investment problem.

TOP: Investments involving regular payments

KEY: compound interest | future value

**25.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 1.5

OBJ: 3.2 Determine, using technology, the total value of an investment when there are regular contributions to the principal. | 3.5 Determine, using technology, possible investment strategies to achieve a financial goal. | 3.8 Solve an investment problem.

TOP: Investments involving regular payments

KEY: compound interest | future value

**26.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 1.6

OBJ: 3.1 Determine and compare the strengths and weaknesses of two or more portfolios. | 3.2 Determine, using technology, the total value of an investment when there are regular contributions to the principal. | 3.3 Graph and compare the total value of an investment with and without regular contributions. | 3.4 Apply the Rule of 72 to solve investment problems, and explain the limitations of the rule. | 3.5 Determine, using technology, possible investment strategies to achieve a financial goal. | 3.6 Explain the advantages and disadvantages of long-term and short-term investment options. | 3.7 Explain, using examples, why smaller investments over a longer term may be better than larger investments over a shorter term. | 3.8 Solve an investment problem.

TOP: Solving investment portfolio problems

KEY: compound interest | principal | future value | portfolio

**27.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 1.6

OBJ: 3.1 Determine and compare the strengths and weaknesses of two or more portfolios. | 3.2 Determine, using technology, the total value of an investment when there are regular contributions to the principal. | 3.3 Graph and compare the total value of an investment with and without regular contributions. | 3.4 Apply the Rule of 72 to solve investment problems, and explain the limitations of the rule. | 3.5 Determine, using technology, possible investment strategies to achieve a financial goal. | 3.6 Explain the advantages and disadvantages of long-term and short-term investment options. | 3.7 Explain, using examples, why smaller investments over a longer term may be better than larger investments over a shorter term. | 3.8 Solve an investment problem.

TOP: Solving investment portfolio problems

KEY: compound interest | principal | future value | portfolio

**28.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 1.6

OBJ: 3.1 Determine and compare the strengths and weaknesses of two or more portfolios. | 3.2 Determine, using technology, the total value of an investment when there are regular contributions to the principal. | 3.3 Graph and compare the total value of an investment with and without regular contributions. | 3.4 Apply the Rule of 72 to solve investment problems, and explain the limitations of the rule. | 3.5 Determine, using technology, possible investment strategies to achieve a financial goal. | 3.6 Explain the advantages and disadvantages of long-term and short-term investment options. | 3.7 Explain, using examples, why smaller investments over a longer term may be better than larger investments over a shorter term. | 3.8 Solve an investment problem.

TOP: Solving investment portfolio problems

KEY: compound interest | principal | future value | portfolio | rate of return

**29.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 2.1

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest. | 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.4 Determine, given the principal, interest rate and number of compounding periods, the total interest of a loan. | 1.5 Graph and describe the effects of changing the value of one of the variables in a situation that involves compound interest. | 1.6 Determine, using technology, the total cost of a loan under a variety of conditions; e.g., different amortization periods, interest rates, compounding periods and terms. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Analyzing loans KEY: loans

**30.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 2.1

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest. | 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.4 Determine, given the principal, interest rate and number of compounding periods, the total interest of a loan. | 1.5 Graph and describe the effects of changing the value of one of the variables in a situation that involves compound interest. | 1.6 Determine, using technology, the total cost of a loan under a variety of conditions; e.g., different amortization periods, interest rates, compounding periods and terms. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Analyzing loans KEY: loans

**31.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 2.1

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest. | 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.4 Determine, given the principal, interest rate and number of compounding periods, the total interest of a loan. | 1.5 Graph and describe the effects of changing the value of one of the variables in a situation that involves compound interest. | 1.6 Determine, using technology, the total cost of a loan under a variety of conditions; e.g., different amortization periods, interest rates, compounding periods and terms. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Analyzing loans KEY: mortgages

**32.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 2.1

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest. | 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.4 Determine, given the principal, interest rate and number of compounding periods, the total interest of a loan. | 1.5 Graph and describe the effects of changing the value of one of the variables in a situation that involves compound interest. | 1.6 Determine, using technology, the total cost of a loan under a variety of conditions; e.g., different amortization periods, interest rates, compounding periods and terms. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Analyzing loans KEY: mortgages

**33.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 2.1

OBJ: 1.1 Explain the advantages and disadvantages of compound interest and simple interest. | 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.4 Determine, given the principal, interest rate and number of compounding periods, the total interest of a loan. | 1.5 Graph and describe the effects of changing the value of one of the variables in a situation that involves compound interest. | 1.6 Determine, using technology, the total cost of a loan under a variety of conditions; e.g., different amortization periods, interest rates, compounding periods and terms. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Analyzing loans KEY: loans

**34.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 2.2

OBJ: 1.2 Identify situations that involve compound interest. | 1.7 Compare and explain, using technology, different credit options that involve compound interest, including bank and store credit cards and special promotions | 1.8 Solve a contextual problem that involves compound interest.

TOP: Exploring credit card use KEY: credit cards

**35.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 2.2

OBJ: 1.2 Identify situations that involve compound interest. | 1.7 Compare and explain, using technology, different credit options that involve compound interest, including bank and store credit cards and special promotions | 1.8 Solve a contextual problem that involves compound interest.

TOP: Exploring credit card use KEY: credit cards

**36.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 2.3

OBJ: 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.4 Determine, given the principal, interest rate and number of compounding periods, the total interest of a loan. | 1.5 Graph and describe the effects of changing the value of one of the variables in a situation that involves compound interest. | 1.7 Compare and explain, using technology, different credit options that involve compound interest, including bank and store credit cards and special promotions. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Solving problems involving credit KEY: credit cards | loans

**37.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 2.3

OBJ: 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.4 Determine, given the principal, interest rate and number of compounding periods, the total interest of a loan. | 1.5 Graph and describe the effects of changing the value of one of the variables in a situation that involves compound interest. | 1.7 Compare and explain, using technology, different credit options that involve compound interest, including bank and store credit cards and special promotions. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Solving problems involving credit KEY: credit cards | lines of credit

**38.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 2.3

OBJ: 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.4 Determine, given the principal, interest rate and number of compounding periods, the total interest of a loan. | 1.5 Graph and describe the effects of changing the value of one of the variables in a situation that involves compound interest. | 1.7 Compare and explain, using technology, different credit options that involve compound interest, including bank and store credit cards and special promotions. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Solving problems involving credit KEY: credit cards | lines of credit

**39.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 2.3

OBJ: 1.2 Identify situations that involve compound interest. | 1.3 Graph and compare, in a given situation, the total interest paid or earned for different compounding periods. | 1.4 Determine, given the principal, interest rate and number of compounding periods, the total interest of a loan. | 1.5 Graph and describe the effects of changing the value of one of the variables in a situation that involves compound interest. | 1.7 Compare and explain, using technology, different credit options that involve compound interest, including bank and store credit cards and special promotions. | 1.8 Solve a contextual problem that involves compound interest.

TOP: Solving problems involving credit KEY: credit cards | lines of credit

**40.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 2.4

OBJ: 2.1 Identify and describe examples of assets that appreciate or depreciate. | 2.2 Compare, using examples, renting, leasing and buying. | 2.3 Justify, for a specific set of circumstances, if renting, buying or leasing would be advantageous. | 2.4 Solve a problem involving renting, leasing or buying that requires the manipulation of a formula. | 2.5 Solve, using technology, a contextual problem that involves cost-and-benefit analysis. TOP: Buy, rent, or lease?

KEY: buy | lease | loans | rent

**41.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 2.4

OBJ: 2.1 Identify and describe examples of assets that appreciate or depreciate. | 2.2 Compare, using examples, renting, leasing and buying. | 2.3 Justify, for a specific set of circumstances, if renting, buying or leasing would be advantageous. | 2.4 Solve a problem involving renting, leasing or buying that requires the manipulation of a formula. | 2.5 Solve, using technology, a contextual problem that involves cost-and-benefit analysis. TOP: Buy, rent, or lease?

KEY: depreciation

**42.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 2.4

OBJ: 2.1 Identify and describe examples of assets that appreciate or depreciate. | 2.2 Compare, using examples, renting, leasing and buying. | 2.3 Justify, for a specific set of circumstances, if renting, buying or leasing would be advantageous. | 2.4 Solve a problem involving renting, leasing or buying that requires the manipulation of a formula. | 2.5 Solve, using technology, a contextual problem that involves cost-and-benefit analysis. TOP: Buy, rent, or lease?

KEY: appreciation | mortgages

**43.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 2.4

OBJ: 2.1 Identify and describe examples of assets that appreciate or depreciate. | 2.2 Compare, using examples, renting, leasing and buying. | 2.3 Justify, for a specific set of circumstances, if renting, buying or leasing would be advantageous. | 2.4 Solve a problem involving renting, leasing or buying that requires the manipulation of a formula. | 2.5 Solve, using technology, a contextual problem that involves cost-and-benefit analysis. TOP: Buy, rent, or lease?

KEY: buy | depreciation | mortgages | rent

**44.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 2.4

OBJ: 2.1 Identify and describe examples of assets that appreciate or depreciate. | 2.2 Compare, using examples, renting, leasing and buying. | 2.3 Justify, for a specific set of circumstances, if renting, buying or leasing would be advantageous. | 2.4 Solve a problem involving renting, leasing or buying that requires the manipulation of a formula. | 2.5 Solve, using technology, a contextual problem that involves cost-and-benefit analysis. TOP: Buy, rent, or lease?

KEY: buy | depreciation | loans | rent

**45.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 2.4

OBJ: 2.1 Identify and describe examples of assets that appreciate or depreciate. | 2.2 Compare, using examples, renting, leasing and buying. | 2.3 Justify, for a specific set of circumstances, if renting, buying or leasing would be advantageous. | 2.4 Solve a problem involving renting, leasing or buying that requires the manipulation of a formula. | 2.5 Solve, using technology, a contextual problem that involves cost-and-benefit analysis. TOP: Buy, rent, or lease?

KEY: buy | depreciation | lease | loans

**46.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 3.1

OBJ: 2.1 Provide examples of the empty set, disjoint sets, subsets and universal sets in context, and explain the reasoning. | 2.2 Organize information such as collected data and number properties, using graphic organizers, and explain the reasoning. | 2.3 Explain what a specified region in a Venn diagram represents, using connecting words (and, or, not) or set notation. | 2.4 Determine the elements in the complement, the intersection or the union of two sets. | 2.6 Identify and correct errors in a given solution to a problem that involves sets. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation.

TOP: Types of Sets and Set Notation KEY: set | element | universal set | disjoint

**47.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 3.1

OBJ: 2.1 Provide examples of the empty set, disjoint sets, subsets and universal sets in context, and explain the reasoning. | 2.2 Organize information such as collected data and number properties, using graphic organizers, and explain the reasoning. | 2.3 Explain what a specified region in a Venn diagram represents, using connecting words (and, or, not) or set notation. | 2.4 Determine the elements in the complement, the intersection or the union of two sets. | 2.6 Identify and correct errors in a given solution to a problem that involves sets. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation.

TOP: Types of Sets and Set Notation KEY: set | element | universal set

**48.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 3.1

OBJ: 2.1 Provide examples of the empty set, disjoint sets, subsets and universal sets in context, and explain the reasoning. | 2.2 Organize information such as collected data and number properties, using graphic organizers, and explain the reasoning. | 2.3 Explain what a specified region in a Venn diagram represents, using connecting words (and, or, not) or set notation. | 2.4 Determine the elements in the complement, the intersection or the union of two sets. | 2.6 Identify and correct errors in a given solution to a problem that involves sets. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation.

TOP: Types of Sets and Set Notation

KEY: set | element | subset | universal set | mutually exclusive

**49.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 3.1

OBJ: 2.1 Provide examples of the empty set, disjoint sets, subsets and universal sets in context, and explain the reasoning. | 2.2 Organize information such as collected data and number properties, using graphic organizers, and explain the reasoning. | 2.3 Explain what a specified region in a Venn diagram represents, using connecting words (and, or, not) or set notation. | 2.4 Determine the elements in the complement, the intersection or the union of two sets. | 2.6 Identify and correct errors in a given solution to a problem that involves sets. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation.

TOP: Types of Sets and Set Notation KEY: set | element | subset | universal set

**50.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 3.1

OBJ: 2.1 Provide examples of the empty set, disjoint sets, subsets and universal sets in context, and explain the reasoning. | 2.2 Organize information such as collected data and number properties, using graphic organizers, and explain the reasoning. | 2.3 Explain what a specified region in a Venn diagram represents, using connecting words (and, or, not) or set notation. | 2.4 Determine the elements in the complement, the intersection or the union of two sets. | 2.6 Identify and correct errors in a given solution to a problem that involves sets. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation.

TOP: Types of Sets and Set Notation KEY: set | element | universal set

**51.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 3.2

OBJ: 2.2 Organize information such as collected data and number properties, using graphic organizers, and explain the reasoning. | 2.3 Explain what a specified region in a Venn diagram represents, using connecting words (and, or, not) or set notation. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation.

TOP: Exploring Relationships between Sets KEY: set | element

**52.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 3.2

OBJ: 2.2 Organize information such as collected data and number properties, using graphic organizers, and explain the reasoning. | 2.3 Explain what a specified region in a Venn diagram represents, using connecting words (and, or, not) or set notation. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation.

TOP: Exploring Relationships between Sets KEY: set | element

**53.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 3.2

OBJ: 2.2 Organize information such as collected data and number properties, using graphic organizers, and explain the reasoning. | 2.3 Explain what a specified region in a Venn diagram represents, using connecting words (and, or, not) or set notation. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation.

TOP: Exploring Relationships between Sets KEY: set | element

**54.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 3.2

OBJ: 2.2 Organize information such as collected data and number properties, using graphic organizers, and explain the reasoning. | 2.3 Explain what a specified region in a Venn diagram represents, using connecting words (and, or, not) or set notation. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation.

TOP: Exploring Relationships between Sets KEY: set | element

**55.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 3.3

OBJ: 2.2 Organize information such as collected data and number properties, using graphic organizers, and explain the reasoning. | 2.3 Explain what a specified region in a Venn diagram represents, using connecting words (and, or, not) or set notation. | 2.4 Determine the elements in the complement, the intersection or the union of two sets. | 2.6 Identify and correct errors in a given solution to a problem that involves sets. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation. TOP: Intersection and Union of Two Sets

KEY: set | element | union

**56.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 3.3

OBJ: 2.2 Organize information such as collected data and number properties, using graphic organizers, and explain the reasoning. | 2.3 Explain what a specified region in a Venn diagram represents, using connecting words (and, or, not) or set notation. | 2.4 Determine the elements in the complement, the intersection or the union of two sets. | 2.6 Identify and correct errors in a given solution to a problem that involves sets. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation. TOP: Intersection and Union of Two Sets

KEY: set | element | union

**57.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 3.3

OBJ: 2.2 Organize information such as collected data and number properties, using graphic organizers, and explain the reasoning. | 2.3 Explain what a specified region in a Venn diagram represents, using connecting words (and, or, not) or set notation. | 2.4 Determine the elements in the complement, the intersection or the union of two sets. | 2.6 Identify and correct errors in a given solution to a problem that involves sets. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation. TOP: Intersection and Union of Two Sets

KEY: set | element | intersection

**58.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 3.3

OBJ: 2.2 Organize information such as collected data and number properties, using graphic organizers, and explain the reasoning. | 2.3 Explain what a specified region in a Venn diagram represents, using connecting words (and, or, not) or set notation. | 2.4 Determine the elements in the complement, the intersection or the union of two sets. | 2.6 Identify and correct errors in a given solution to a problem that involves sets. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation. TOP: Intersection and Union of Two Sets

KEY: set | element | union

**59.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 3.3

OBJ: 2.2 Organize information such as collected data and number properties, using graphic organizers, and explain the reasoning. | 2.3 Explain what a specified region in a Venn diagram represents, using connecting words (and, or, not) or set notation. | 2.4 Determine the elements in the complement, the intersection or the union of two sets. | 2.6 Identify and correct errors in a given solution to a problem that involves sets. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation. TOP: Intersection and Union of Two Sets

KEY: set | element | intersection

**60.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 3.4

OBJ: 2.5 Explain how set theory is used in applications such as Internet searches, database queries, data analysis, games and puzzles. | 2.6 Identify and correct errors in a given solution to a problem that involves sets. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation. TOP: Applications of Set Theory

KEY: set | element | intersection

**61.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 3.4

OBJ: 2.5 Explain how set theory is used in applications such as Internet searches, database queries, data analysis, games and puzzles. | 2.6 Identify and correct errors in a given solution to a problem that involves sets. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation. TOP: Applications of Set Theory

KEY: set | element | intersection

**62.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 3.4

OBJ: 2.5 Explain how set theory is used in applications such as Internet searches, database queries, data analysis, games and puzzles. | 2.6 Identify and correct errors in a given solution to a problem that involves sets. | 2.7 Solve a contextual problem that involves sets, and record the solution, using set notation. TOP: Applications of Set Theory

KEY: set | element | intersection | union

**63.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 3.5

OBJ: 3.1 Analyze an “if-then” statement, make a conclusion, and explain the reasoning. | 3.2 Make and justify a decision, using “what if?” questions, in contexts such as probability, finance, sports, games or puzzles, with or without technology. | 3.3 Determine the converse, inverse and contrapositive of an “if-then” statement; determine its veracity; and, if it is false, provide a counterexample. | 3.4 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its converse or inverse. | 3.6 Identify and describe contexts in which a biconditional statement can be justified. | 3.7 Analyze and summarize, using a graphic organizer such as a truth table or Venn diagram, the possible results of given logical arguments that involve biconditional, converse, inverse or contrapositive statements.

TOP: Conditional Statements and Their Converse

KEY: converse | conditional statement | hypothesis

**64.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 3.5

OBJ: 3.1 Analyze an “if-then” statement, make a conclusion, and explain the reasoning. | 3.2 Make and justify a decision, using “what if?” questions, in contexts such as probability, finance, sports, games or puzzles, with or without technology. | 3.3 Determine the converse, inverse and contrapositive of an “if-then” statement; determine its veracity; and, if it is false, provide a counterexample. | 3.4 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its converse or inverse. | 3.6 Identify and describe contexts in which a biconditional statement can be justified. | 3.7 Analyze and summarize, using a graphic organizer such as a truth table or Venn diagram, the possible results of given logical arguments that involve biconditional, converse, inverse or contrapositive statements.

TOP: Conditional Statements and Their Converse

KEY: conditional statement | converse

**65.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 3.5

OBJ: 3.1 Analyze an “if-then” statement, make a conclusion, and explain the reasoning. | 3.2 Make and justify a decision, using “what if?” questions, in contexts such as probability, finance, sports, games or puzzles, with or without technology. | 3.3 Determine the converse, inverse and contrapositive of an “if-then” statement; determine its veracity; and, if it is false, provide a counterexample. | 3.4 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its converse or inverse. | 3.6 Identify and describe contexts in which a biconditional statement can be justified. | 3.7 Analyze and summarize, using a graphic organizer such as a truth table or Venn diagram, the possible results of given logical arguments that involve biconditional, converse, inverse or contrapositive statements.

TOP: Conditional Statements and Their Converse

KEY: conditional statement | converse

**66.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 3.5

OBJ: 3.1 Analyze an “if-then” statement, make a conclusion, and explain the reasoning. | 3.2 Make and justify a decision, using “what if?” questions, in contexts such as probability, finance, sports, games or puzzles, with or without technology. | 3.3 Determine the converse, inverse and contrapositive of an “if-then” statement; determine its veracity; and, if it is false, provide a counterexample. | 3.4 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its converse or inverse. | 3.6 Identify and describe contexts in which a biconditional statement can be justified. | 3.7 Analyze and summarize, using a graphic organizer such as a truth table or Venn diagram, the possible results of given logical arguments that involve biconditional, converse, inverse or contrapositive statements.

TOP: Conditional Statements and Their Converse KEY: conditional statement

**67.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 3.5

OBJ: 3.1 Analyze an “if-then” statement, make a conclusion, and explain the reasoning. | 3.2 Make and justify a decision, using “what if?” questions, in contexts such as probability, finance, sports, games or puzzles, with or without technology. | 3.3 Determine the converse, inverse and contrapositive of an “if-then” statement; determine its veracity; and, if it is false, provide a counterexample. | 3.4 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its converse or inverse. | 3.6 Identify and describe contexts in which a biconditional statement can be justified. | 3.7 Analyze and summarize, using a graphic organizer such as a truth table or Venn diagram, the possible results of given logical arguments that involve biconditional, converse, inverse or contrapositive statements.

TOP: Conditional Statements and Their Converse KEY: conditional statement

**68.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 3.6

OBJ: 3.3 Determine the converse, inverse and contrapositive of an “if-then” statement; determine its veracity; and, if it is false, provide a counterexample. | 3.4 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its converse or inverse. | 3.5 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its contrapositive. | 3.7 Analyze and summarize, using a graphic organizer such as a truth table or Venn diagram, the possible results of given logical arguments that involve biconditional, converse, inverse or contrapositive statements.

TOP: The Inverse and the Contrapositive of Conditional Statements

KEY: conditional statement | inverse | contrapositive | hypothesis

**69.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 3.6

OBJ: 3.3 Determine the converse, inverse and contrapositive of an “if-then” statement; determine its veracity; and, if it is false, provide a counterexample. | 3.4 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its converse or inverse. | 3.5 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its contrapositive. | 3.7 Analyze and summarize, using a graphic organizer such as a truth table or Venn diagram, the possible results of given logical arguments that involve biconditional, converse, inverse or contrapositive statements.

TOP: The Inverse and the Contrapositive of Conditional Statements

KEY: conditional statement | inverse | converse | contrapositive | hypothesis

**70.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 3.6

OBJ: 3.3 Determine the converse, inverse and contrapositive of an “if-then” statement; determine its veracity; and, if it is false, provide a counterexample. | 3.4 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its converse or inverse. | 3.5 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its contrapositive. | 3.7 Analyze and summarize, using a graphic organizer such as a truth table or Venn diagram, the possible results of given logical arguments that involve biconditional, converse, inverse or contrapositive statements.

TOP: The Inverse and the Contrapositive of Conditional Statements

KEY: conditional statement | inverse | converse | contrapositive | hypothesis

**71.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 3.6

OBJ: 3.3 Determine the converse, inverse and contrapositive of an “if-then” statement; determine its veracity; and, if it is false, provide a counterexample. | 3.4 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its converse or inverse. | 3.5 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its contrapositive. | 3.7 Analyze and summarize, using a graphic organizer such as a truth table or Venn diagram, the possible results of given logical arguments that involve biconditional, converse, inverse or contrapositive statements.

TOP: The Inverse and the Contrapositive of Conditional Statements

KEY: conditional statement | converse

**72.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 3.6

OBJ: 3.3 Determine the converse, inverse and contrapositive of an “if-then” statement; determine its veracity; and, if it is false, provide a counterexample. | 3.4 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its converse or inverse. | 3.5 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its contrapositive. | 3.7 Analyze and summarize, using a graphic organizer such as a truth table or Venn diagram, the possible results of given logical arguments that involve biconditional, converse, inverse or contrapositive statements.

TOP: The Inverse and the Contrapositive of Conditional Statements

KEY: conditional statement | converse

**73.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 3.6

OBJ: 3.3 Determine the converse, inverse and contrapositive of an “if-then” statement; determine its veracity; and, if it is false, provide a counterexample. | 3.4 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its converse or inverse. | 3.5 Demonstrate, using examples, that the veracity of any statement does not imply the veracity of its contrapositive. | 3.7 Analyze and summarize, using a graphic organizer such as a truth table or Venn diagram, the possible results of given logical arguments that involve biconditional, converse, inverse or contrapositive statements.

TOP: The Inverse and the Contrapositive of Conditional Statements

KEY: conditional statement | inverse

**74.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 5.1

OBJ: 1.4 Determine the probability of, or the odds for and against, an outcome in a situation. | 1.5 Explain, using examples, how decisions may be based on probability or odds and on subjective judgments. | 1.6 Solve a contextual problem that involves odds or probability.

TOP: Exploring Probability KEY: probability

**75.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 5.2

OBJ: 1.1 Provide examples of statements of probability and odds found in fields such as media, biology, sports, medicine, sociology and psychology. | 1.2 Explain, using examples, the relationship between odds (part-part) and probability (part-whole). | 1.3 Express odds as a probability and vice versa. | 1.4 Determine the probability of, or the odds for and against, an outcome in a situation. | 1.5 Explain, using examples, how decisions may be based on probability or odds and on subjective judgments. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Probability and Odds KEY: probability | odds

**76.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 5.2

OBJ: 1.1 Provide examples of statements of probability and odds found in fields such as media, biology, sports, medicine, sociology and psychology. | 1.2 Explain, using examples, the relationship between odds (part-part) and probability (part-whole). | 1.3 Express odds as a probability and vice versa. | 1.4 Determine the probability of, or the odds for and against, an outcome in a situation. | 1.5 Explain, using examples, how decisions may be based on probability or odds and on subjective judgments. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Probability and Odds KEY: probability | odds

**77.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 5.2

OBJ: 1.1 Provide examples of statements of probability and odds found in fields such as media, biology, sports, medicine, sociology and psychology. | 1.2 Explain, using examples, the relationship between odds (part-part) and probability (part-whole). | 1.3 Express odds as a probability and vice versa. | 1.4 Determine the probability of, or the odds for and against, an outcome in a situation. | 1.5 Explain, using examples, how decisions may be based on probability or odds and on subjective judgments. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Probability and Odds KEY: probability | odds

**78.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 5.2

OBJ: 1.1 Provide examples of statements of probability and odds found in fields such as media, biology, sports, medicine, sociology and psychology. | 1.2 Explain, using examples, the relationship between odds (part-part) and probability (part-whole). | 1.3 Express odds as a probability and vice versa. | 1.4 Determine the probability of, or the odds for and against, an outcome in a situation. | 1.5 Explain, using examples, how decisions may be based on probability or odds and on subjective judgments. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Probability and Odds KEY: probability | odds

**79.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 5.3

OBJ: 5.9 Solve a contextual problem that involves probability and permutations. | 6.4 Solve a contextual problem that involves combinations and probability.

TOP: Probabilities Using Counting Methods KEY: probability | permutation

**80.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 5.3

OBJ: 5.9 Solve a contextual problem that involves probability and permutations. | 6.4 Solve a contextual problem that involves combinations and probability.

TOP: Probabilities Using Counting Methods KEY: probability | permutation

**81.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 5.3

OBJ: 5.9 Solve a contextual problem that involves probability and permutations. | 6.4 Solve a contextual problem that involves combinations and probability.

TOP: Probabilities Using Counting Methods KEY: probability | permutation

**82.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 5.3

OBJ: 5.9 Solve a contextual problem that involves probability and permutations. | 6.4 Solve a contextual problem that involves combinations and probability.

TOP: Probabilities Using Counting Methods KEY: probability | permutation

**83.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 5.3

OBJ: 5.9 Solve a contextual problem that involves probability and permutations. | 6.4 Solve a contextual problem that involves combinations and probability.

TOP: Probabilities Using Counting Methods KEY: probability | permutation

**84.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 5.4

OBJ: 2.1 Classify events as mutually exclusive or non-mutually exclusive, and explain the reasoning. | 2.2 Determine if two events are complementary, and explain the reasoning. | 2.3 Represent, using set notation or graphic organizers, mutually exclusive (including complementary) and non-mutually exclusive events. | 2.4 Solve a contextual problem that involves the probability of mutually exclusive or non-mutually exclusive events. | 2.5 Solve a contextual problem that involves the probability of complementary events. | 2.6 Create and solve a problem that involves mutually exclusive or non-mutually exclusive events.

TOP: Mutually Exclusive Events KEY: probability | mutually exclusive

**85.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 5.4

OBJ: 2.1 Classify events as mutually exclusive or non-mutually exclusive, and explain the reasoning. | 2.2 Determine if two events are complementary, and explain the reasoning. | 2.3 Represent, using set notation or graphic organizers, mutually exclusive (including complementary) and non-mutually exclusive events. | 2.4 Solve a contextual problem that involves the probability of mutually exclusive or non-mutually exclusive events. | 2.5 Solve a contextual problem that involves the probability of complementary events. | 2.6 Create and solve a problem that involves mutually exclusive or non-mutually exclusive events.

TOP: Mutually Exclusive Events KEY: probability | mutually exclusive

**86.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 5.4

OBJ: 2.1 Classify events as mutually exclusive or non-mutually exclusive, and explain the reasoning. | 2.2 Determine if two events are complementary, and explain the reasoning. | 2.3 Represent, using set notation or graphic organizers, mutually exclusive (including complementary) and non-mutually exclusive events. | 2.4 Solve a contextual problem that involves the probability of mutually exclusive or non-mutually exclusive events. | 2.5 Solve a contextual problem that involves the probability of complementary events. | 2.6 Create and solve a problem that involves mutually exclusive or non-mutually exclusive events.

TOP: Mutually Exclusive Events KEY: probability | mutually exclusive

**87.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 5.4

OBJ: 2.1 Classify events as mutually exclusive or non-mutually exclusive, and explain the reasoning. | 2.2 Determine if two events are complementary, and explain the reasoning. | 2.3 Represent, using set notation or graphic organizers, mutually exclusive (including complementary) and non-mutually exclusive events. | 2.4 Solve a contextual problem that involves the probability of mutually exclusive or non-mutually exclusive events. | 2.5 Solve a contextual problem that involves the probability of complementary events. | 2.6 Create and solve a problem that involves mutually exclusive or non-mutually exclusive events.

TOP: Mutually Exclusive Events KEY: probability | mutually exclusive

**88.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 5.4

OBJ: 2.1 Classify events as mutually exclusive or non-mutually exclusive, and explain the reasoning. | 2.2 Determine if two events are complementary, and explain the reasoning. | 2.3 Represent, using set notation or graphic organizers, mutually exclusive (including complementary) and non-mutually exclusive events. | 2.4 Solve a contextual problem that involves the probability of mutually exclusive or non-mutually exclusive events. | 2.5 Solve a contextual problem that involves the probability of complementary events. | 2.6 Create and solve a problem that involves mutually exclusive or non-mutually exclusive events.

TOP: Mutually Exclusive Events KEY: probability | mutually exclusive | odds

**89.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 5.4

OBJ: 2.1 Classify events as mutually exclusive or non-mutually exclusive, and explain the reasoning. | 2.2 Determine if two events are complementary, and explain the reasoning. | 2.3 Represent, using set notation or graphic organizers, mutually exclusive (including complementary) and non-mutually exclusive events. | 2.4 Solve a contextual problem that involves the probability of mutually exclusive or non-mutually exclusive events. | 2.5 Solve a contextual problem that involves the probability of complementary events. | 2.6 Create and solve a problem that involves mutually exclusive or non-mutually exclusive events.

TOP: Mutually Exclusive Events KEY: probability | mutually exclusive | odds

**90.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 5.5

OBJ: 3.2 Determine the probability of an event, given the occurrence of a previous event. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Conditional Probability

KEY: probability | conditional probability

**91.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 5.5

OBJ: 3.2 Determine the probability of an event, given the occurrence of a previous event. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Conditional Probability

KEY: probability | dependent

**92.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 5.5

OBJ: 3.2 Determine the probability of an event, given the occurrence of a previous event. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Conditional Probability

KEY: probability | dependent

**93.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 5.5

OBJ: 3.2 Determine the probability of an event, given the occurrence of a previous event. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Conditional Probability

KEY: probability | conditional probability

**94.** ANS: B PTS: 1 DIF: Grade 12 REF: Lesson 5.6

OBJ: 3.1 Compare, using examples, dependent and independent events. | 3.3 Determine the probability of two dependent or two independent events. | 3.4 Create and solve a contextual problem that involves determining the probability of dependent or independent events. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Independent Events

KEY: probability | independent

**95.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 5.6

OBJ: 3.1 Compare, using examples, dependent and independent events. | 3.3 Determine the probability of two dependent or two independent events. | 3.4 Create and solve a contextual problem that involves determining the probability of dependent or independent events. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Independent Events

KEY: probability | independent

**96.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 5.6

OBJ: 3.1 Compare, using examples, dependent and independent events. | 3.3 Determine the probability of two dependent or two independent events. | 3.4 Create and solve a contextual problem that involves determining the probability of dependent or independent events. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Independent Events

KEY: probability | independent

**97.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 5.6

OBJ: 3.1 Compare, using examples, dependent and independent events. | 3.3 Determine the probability of two dependent or two independent events. | 3.4 Create and solve a contextual problem that involves determining the probability of dependent or independent events. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Independent Events

KEY: probability | independent

**98.** ANS: D PTS: 1 DIF: Grade 12 REF: Lesson 5.6

OBJ: 3.1 Compare, using examples, dependent and independent events. | 3.3 Determine the probability of two dependent or two independent events. | 3.4 Create and solve a contextual problem that involves determining the probability of dependent or independent events. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Independent Events

KEY: probability | independent

**99.** ANS: C PTS: 1 DIF: Grade 12 REF: Lesson 5.6

OBJ: 3.1 Compare, using examples, dependent and independent events. | 3.3 Determine the probability of two dependent or two independent events. | 3.4 Create and solve a contextual problem that involves determining the probability of dependent or independent events. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Independent Events

KEY: probability | independent

**100.** ANS: A PTS: 1 DIF: Grade 12 REF: Lesson 5.6

OBJ: 3.1 Compare, using examples, dependent and independent events. | 3.3 Determine the probability of two dependent or two independent events. | 3.4 Create and solve a contextual problem that involves determining the probability of dependent or independent events. | 1.6 Solve a contextual problem that involves odds or probability. TOP: Independent Events

KEY: probability | independent