UNIT 2

Making Informed Purchasing Decisions



In this section of the course, we will delve into math problems designed to sharpen your decision-making abilities. We will explore topics such as calculating discounts and sale prices, determining the better unit price for a product, evaluating the financial feasibility of repairing or replacing an item, and assessing the value of purchasing add-ons like warranties or insurance. We will also explore the realm of membership fees versus single-use costs to determine which payment structure offers the most financial advantage. Through these exercises you can develop a keen understanding of the long-term financial impact of your purchasing decisions.

2.1 Discounts and Sale Prices

There are various types of store discounts including, two-for-one, buy one, get one free and percentage discounts. By practicing the following questions, you can learn how to spot and calculate the best deals and make savvy purchasing decisions.

Typically, a store will discount an item by a percentage of the original price. The discount rate is usually given as a percentage. To find the discount, multiply the discount rate by the original price. To find the sale price, subtract the discount from the original price.

The first one has been solved for you!

1 A video game console is originally priced at $300, and there is a 10% discount. What is the sale price?

SOLUTION

Step 1: Calculate the discount

Discount = 10% *of* $300 = 0.10 x $300 = $30

Step 2: Calculate the sale price

Sale price = *Original price* - *Discount* = $300 - $30 = $270

(You can also calculate the sale price this way: $300 x 0.90)

Now try the next questions on your own!

2 A pair of sunglasses is originally priced at $120, and there is a 15% discount. What is the sale price?

3 A laptop is originally priced at $900, and there is a 25% discount. What is the sale price?

4 A bicycle is originally priced at $400, but there is a 20% discount. What is the sale price?

5 A pair of boots is originally priced at $150, and there is a 30% discount. What is the sale price?

6 An item is on sale for 30% off its original price of $90. What is the sale price of the item?

7 An item is on sale for 25% off its original price of $150. What is the sale price of the item?

8 An item is on sale for 25% off its original price of $120. What is the sale price of the item?

9 Store A offers a coupon for 25% off the original price, and Store B offers a coupon for $10 off the original price. If the original price is $80, which coupon offers a better deal?

10 Store E offers a coupon for $5 off any purchase, and Store F offers a coupon for 20% off the original price. If the original price is $30, which coupon offers a better deal?

11 Store G offers a coupon for 40% off the original price, and Store H offers a coupon for $15 off the original price. If the original price is $50, which coupon offers a better deal?

12 Store I offers a coupon for 10% off the original price, and Store J offers a coupon for $8 off the original price. If the original price is $70, which coupon offers a better deal?

13 Store A offers a coupon for 25% off the original price, Store B offers a coupon for $15 off the original price, and Store C offers a coupon for 10% off the original price. If the original price is $80, which coupon saves you the most money? Calculate the final price for each store after applying the coupon.

14 You purchase the same shampoo monthly and are comparing four-month promotions at the following stores. Store X offers a coupon for 30% off the original price, Store Y offers a coupon for $20 off the original price, and Store Z offers a "buy one, get one free" coupon. If the original price is $120, which coupon saves you the most money during the four-month promotion? Calculate the final price for each store after applying the coupon.

15 A store has a "buy 1 get 1 free" offer on shampoos. The original price of the shampoo is $50. How much money do you save by taking advantage of this deal?

16 Lucy purchased a sweater for $132 on sale, when the regular price was $220. What was the rate of discount?

17 The sale price of a used Geography textbook after a discount of 20% was $110. What was the regular price of the book?

18 In a boutique, an evening gown is on sale for $80. The original price of the gown was $100. What is the rate of discount?

19 A store offers a coupon that gives you $5 back on a purchase of $25 or more. If you buy $40 worth of items, how much money will you save with the coupon?

20 A store offers a coupon that gives you 15% cash back on your total purchase. If you spend $200, how much money will you save with the coupon?

21 A store offers a coupon that gives you $10 back for every $50 spent. If you spend $120, how much money will you get back?

22 A store offers a coupon that gives you 20% cash back on your total purchase. If you spend $80, how much money will you get back?

23 Store A offers a promotion where you can buy 3 items for $20. Store B offers a promotion where you can buy 5 items for $35. Which store offers a better deal in terms of the price per item?

24 Store A offers a promotion where you can buy 2 items for $12. Store B offers a promotion where you can buy 4 items for $26. Which store offers a better deal in terms of the price per item?

2.2 Unit Price and Converting Units of Measure

Engaging in math problems that focus on calculating unit prices and converting units of measure can equip you with valuable skills to make informed purchasing decisions. By determining the unit price of a product, you can compare different package sizes or brands to find the best value for your money.

The first unit of measure conversion question has been solved for you.

1 A 2-gallon jug of orange juice costs $9.60. What is the price per quart?

SOLUTION

Step 1: Convert from gallons to quarts. (1 gallon = 4 quarts)

2 x 4 *quarts* = 8 *quarts*

Step 2: Divide the total price by 8. $9.60/8 = $1.20

The price per quart = $1.20

Now try the rest of these questions.

2 A 4–yard roll of yarn costs $4.80. What is the price per foot? (1 yard = 3 feet)

3 A 4-foot roll of aluminum foil costs $0.96. What is the price per inch? (1 foot = 12 inches)

4 A 2-quart carton of milk costs $2.80. What is the price per cup? (1 quart = 4 cups)

5 3 pounds of chicken costs $2.40. What is the price per ounce? (1 pound = 16 ounces)

6 A package of 500g of rice costs $3.50. What is the price per kilogram? (1,000 g = 1 kg)

7 A pack of 250ml juice costs $1.80. What is the unit price per liter? (1,000 ml = 1 L)

8 A bag of apples weighing 3 pounds costs $2.99. What is the unit price per kilogram? (1 pound = 0.45359237 kilograms)

9 A bottle of orange juice containing 1.5 liters costs $1.99. What is the unit price per gallon? (1 liter = 0.2641720524 gallons)

10 2 tons of soil cost $4,000. What is the price per pound? (1 ton = 2,000 pounds)

11 A 3-gallon container of paint costs $53.20. What is the price per quart? (1 gallon = 4 quarts)

2.3 Comparing Offers

Now try these. Which offer is better?

1 At Supermart ABC, a pack of 12 pens costs $3.60, while at PenMart, a pack of 6 pens costs $1.80. Which store offers the better unit price per pen?

2 At BestBakery, a box of 24 cookies costs $12. At CookieHeaven, a box of 16 cookies costs $8. Which store offers the better unit price per cookie?

3 At FreshFarm, a 2-pound bag of apples costs $3. At FruitMart, a 5-pound bag of apples costs $7. Which store offers the better price per pound?

4 At MegaMart, a 16-ounce bottle of shampoo costs $4. At SuperSaver, a 12-ounce bottle of shampoo costs $3. Which store offers the better price per ounce?

5 At SportsGear, a pack of 10 tennis balls costs $15. At PlayPro, a pack of 6 tennis balls costs $10. Which store offers the better price per tennis ball?

6 At BookMart, a 200-page notebook costs $2. At StationeryWorld, a 100-page notebook costs $1. Which store offers the better price per page?

7 At CoffeeHouse, a 12-ounce bag of coffee costs $8. At BrewCafe, a 16-ounce bag of coffee costs $12. Which store offers the better price per ounce?

8 At MovieZone, a 2-hour movie rental costs $4. At FlixNow, a 3-hour movie rental costs $6. Which store offers the better price per hour?

2.4 Comparing Options

1 Jenna is considering purchasing a music streaming service. The service offers two options: a monthly subscription plan for $19.99 or the option to purchase individual songs for $1.29 each. If Jenna typically listens to 16 songs per month, which option is more financially sensible for her?

2 Emily is an avid reader and is deciding between two options for accessing books. Option 1 is a monthly book subscription service that costs $19.99 per month, allowing her to borrow up to 5 books, plus $1.25 per additional book. Option 2 is purchasing books individually for $2.99 per book. If Emily reads 8 books per month, which option is more financially sensible for her?

3 Alex wants to watch movies regularly. He can either rent movies from a local rental store for $2.49 per movie or subscribe to a streaming service for $15 per month. If Alex watches 6 movies per month, which option costs less?

4 Amy enjoys going to the gym to work out. She can either pay $30 per month for a gym membership or pay $2.25 for a daily pass each time she goes to the gym. If Amy goes to the gym three times a week, which option will be more cost effective?

5 Susie has a laptop that is not working properly. She can either repair it for $150 or buy a new one for $800. The expected lifespan of the repaired laptop is 3 years, while the new laptop is expected to last for 5 years. Which option has a lower cost per year?

6 Mark wants to purchase a bike. He finds a used bike for $200, but it requires repairs costing $50. Alternatively, he can buy a brand new bike for $350. How much money can Mark save by buying the used bike and getting it repaired?

7 Amy spends $50 per month on cable TV subscription. She found a streaming service that costs $10 per month. How much money can Amy save per year by switching to the streaming service?

8 Jake is considering buying a hair dryer. The cost of a hair dryer is $40, and he estimates that it will last for 2 years. Alternatively, he can go to a hair salon and pay $1 per visit for blow drying, with an average of 2 visits per month. Which option is more cost-effective over a period of two years?

9 Michael is considering joining a gym. The gym offers monthly memberships for $50 or annual memberships for $500. Calculate the cost per month for each option and determine which one is more cost-effective.

10 Sarah drinks coffee five times a week. Sarah spends $3.65 on coffee from a café, five days a week. She wants to save money by making coffee at home instead. If she buys a bag of coffee beans at a cost of $10 to make 5 cups of coffee, how much can Sarah save in a month by brewing her own coffee?

11 Sam wants to compare meal options. The total cost of ingredients to cook breakfast, lunch and dinner for seven days is $375. Eating at restaurants costs $20 per meal plus 5% tip, and ordering food delivery costs $30 per meal plus 2% tax. If Sam eats three meals a day, which option is the most cost-effective per week?

Let's Explore

12 Emily is heading off to college and needs a reliable laptop for her studies. She finds one for $1,000 and is offered a 4-year extended warranty for $150. The warranty covers all repairs and includes one-time accidental damage replacement. Emily knows she will use the laptop extensively for her coursework and projects. She estimates a 60% chance of needing repairs and encountering damage during her college years. Determine whether Emily ought to purchase the warranty.

13 Sarah replaces her mobile phone every year. She plans to buy a new one for $800. The store is offering an extended warranty for an additional $175, to cover any repairs and replacements for the next two years. Should she purchase the warranty?

14 Tom and Lisa are moving into a new home and need to purchase a refrigerator, a washer and a dryer. Each appliance costs $800. The store offers a bundle warranty for all three appliances for $200, covering repairs and replacements for five years. While they are generally careful with their appliances, Tom and Lisa recognize that appliances may need repairs. They estimate a combined 10% chance of needing repairs on any of the appliances in the next five years. Determine whether they should purchase the bundle warranty.

2.5 Square Footage Price and Property Comparison

Understanding the price per square foot or meter is crucial when buying or selling property or land. This metric allows you to make informed decisions based on objective measurements. Here are several reasons why this is important.

- Effective Comparison: By calculating the cost per square foot or meter, you can directly compare properties.
- Identifying Trends: Tracking the cost per square foot/meter over time can help you spot trends in the real estate market and plan a purchase or sale strategically.
- Informed Negotiation: Knowing the cost per square foot/meter can empower you during purchase or sale negotiations.
- Investment Decisions: As a real estate investor, understanding the cost per square foot/meter can allow you to evaluate the potential return on investment and estimate overall profitability more accurately.
- Avoiding Overpaying: Without a grasp of this metric, you might unknowingly overpay for a property that appears appropriately priced, but is actually priced too high relative to its size or location.
- Projecting Expenses: When renovating or making additions to a property, knowing the cost per square foot/meter can help you estimate expenses and determine whether the project aligns with your budget and potential resale value.

In sum, understanding the price or cost per square foot/meter is a fundamental aspect of making well-informed decisions in the real estate market.

Now, let's calculate the price per square foot/meter in the following problems.

1 You are considering purchasing one of two properties. Casablanca has an area of 1,500 square feet and is priced at $300,000. Willows Creek has an area of 1,800 square feet and is priced at $360,000. Calculate the price per square foot for each property and determine which property has a lower price per square foot.

2 Joe is looking at three properties:

Property 1: 1,200 sq feet and priced at $240,000

Property 2: 2,800 sq feet and priced at $470,000

Property 3: 1,500 sq feet and priced at $315,000

Calculate the price per square foot for each property and determine which property offers the best value based on lowest price per square foot.

3 Emmanuel wants to purchase land that costs $250 per square meter. The land is 10,000 square feet in total. How much will Emmanuel have to pay to purchase the land? (1 sq meter = 10.764 sq ft)

4 Ayan is considering purchasing an apartment. Apartment A is priced at $200 per square meter and Apartment B is priced at $20 per square foot. Which apartment has a lower price per square foot? (1 sq meter = 10.764 sq ft)

5 You own an apartment that has an area of 150 square meters. The property management company charges a service fee of AED 14 per square foot for the maintenance of common areas. Calculate the total service charge you need to pay. (1 sq meter = 10.764 sq ft)

6 Rihanna wants to purchase a condo for 500,000 Euros. The annual service charge is 14 Euros per square foot. (a) If the condo is 450 square feet, how much will Rihanna pay in service charges annually? (b) How much will she pay the real estate agent, who charges a 2% commission based on the purchase price?

7 Taylor wants to rent a 250 square meter apartment for 27,650 AED. The landlord wants her to pay the annual service charge of 10 AED per square meter. (a) How much in service charges will she have to pay? (b) If the real estate agent charges the landlord a 5% commission based on the rental amount, how much will the landlord pay to the agent?

2.6 Currency Exchanges

Understanding how to calculate currency exchanges when traveling or purchasing an item online in a foreign currency ensures that you are aware of the actual cost and can make informed decisions about the value of the products or services you are purchasing. Note: The exchange rates and values used in the following questions are fictional. Actual exchange rates may vary.

The following question has been solved for you.

1 Ahmed from the UAE is visiting London and wants to buy a souvenir that costs £45. The exchange rate is 1 GBP = 4.50 AED. How much will Ahmed pay in AED?

SOLUTION

Since 1 GB = 4.50 AED, Ahmed must multiply the price by 4.50 AED/GBP.

Therefore, Ahmed will pay GBP 45 x 4.50 AED/GBP = AED 202.50.

Now try these questions.

2 Sara exchanged 400 UAE dirhams (AED) to British pounds (GBP) at an exchange rate of 1 GBP = 4.25 AED. How much GBP did Sara receive?

3 Omar converted 1,250 AED to GBP and received 250 GBP. What is 1 AED worth?

4 Aisha is traveling from the UAE to London with 1,500 AED. If the exchange rate is 1 GBP = 4.75 AED, how much in GBP will Aisha have after the conversion?

5 Mohammad bought a pair of shoes in London for £150. If the exchange rate is 1 GBP = 4.60 AED, how much did Mohammad spend in AED?

6 Fatima from Nigeria is traveling to the United States with 20,000 NGN. The exchange rate is 1 US dollar (USD) = 400 NGN. How much will Fatima receive in USD after the conversion?

7 Samuel exchanged 500,000 Nigerian naira (NGN) to USD and received 1,500 USD. How much is 1 NGN worth?

8 Tunde wants to buy a laptop in the US for $1,200. If the exchange rate is 1 USD = 410 NGN, how much will Tunde pay in NGN?

9 Sarah exchanged 1,000,000 NGN to USD at an exchange rate of 1 USD = 380 NGN. How much USD did Sarah receive?

10 If the exchange rate is 1 USD = 440 NGN, how much NGN would you receive for $500?

11 Emily is traveling from Canada to Jordan with 1,500 CAD. If the exchange rate is 1 CAD = 0.57 Jordanian dinars (JOD), how many JOD will Emily have after the conversion?

12 James exchanged 10,000 CAD to JOD and received 4,250 JOD. How much is 1 CAD worth relative to JOD?

13 Chloe wants to buy a traditional Jordanian outfit in Amman for 80 JOD. If the exchange rate is 1 CAD = 0.43 JOD, how much will Chloe spend in CAD?

14 David exchanged 2,000 CAD to JOD at an exchange rate of 1 CAD = 0.50 JOD. How much in JOD did David receive?

15 If the exchange rate is 1 CAD = 0.56 JOD, how much JOD would you receive for 500 CAD?

16 Ali traveled from the UAE to London and exchanged 2,500 AED to GBP. If he received 500 GBP, how much was 1 AED worth in GBP?

17 Michael wants to travel to South Africa and exchange USD $800. If the exchange rate is 1 USD = 16.50 South African rand (ZAR), how much will Michael receive in ZAR?

18 Emily is traveling from Canada to Jordan and wants to exchange 2,500 CAD to JOD. If the exchange rate is 1 CAD = 0.55 JOD, how much JOD will Emily receive?

19 John is visiting Dubai from the UK and wants to convert 600 GBP to AED. If the exchange rate is 1 GBP = 5.10 AED, how much AED will John receive?

20 Maria is traveling from Germany to Australia and wants to exchange 1,000 euros (EUR) to Australian dollars (AUD). If the exchange rate is 1 EUR = 1.50 AUD, how much AUD will Maria receive?

21 Liam traveled from Australia to France and exchanged 2,500 AUD to euros. If he received 1,750 EUR, how much was 1 AUD worth in EUR?

22 Emma wants to buy a designer handbag in Paris for 600 EUR. If the exchange rate is 1 EUR = 1.20 AUD, how much will Emma pay in AUD?

23 Sarah is traveling from Australia to Italy and converted 5,000 AUD to EUR. If she received 3,200 EUR, how much was 1 AUD worth in EUR?

24 Olivia is visiting Sydney from Spain and wants to convert 800 EUR to AUD. If the exchange rate is 1 EUR = 1.40 AUD, how much AUD will Olivia receive?

25 Juan is traveling from Argentina to Brazil and wants to exchange 2,000 Argentine pesos (ARS) to Brazilian reals (BRL). If the exchange rate is 1 ARS = 0.06 BRL, how many BRL will Juan receive?

26 Sofia is visiting Peru from Colombia and wants to convert 1,500 Colombian pesos (COP) to Peruvian soles (PEN). If the exchange rate is 1 COP = 0.003 PEN, how many PEN will Sofia receive?

27 Carlos is traveling from Chile to Argentina and wants to exchange 100,000 Chilean pesos (CLP) to ARS. If the exchange rate is 1 CLP = 0.09 ARS, how many ARS will Carlos receive?

28 Ana wants to buy souvenirs in Uruguay and needs to convert 500 BRL to Uruguayan pesos (UYU). If the exchange rate is 1 BRL = 8.50 UYU, how many UYU will Ana receive?

29 Diego is traveling from Peru to Bolivia and wants to exchange 1,000 PEN to Bolivian bolivianos (BOB). If the exchange rate is 1 PEN = 0.60 BOB, how many BOB will Diego receive?

30 Hiroshi is traveling from Japan to the United States and wants to exchange 100,000 Japanese yen (JPY) to USD. If the exchange rate is 1 USD = 110 JPY, how many USD will Hiroshi receive?

31 Emi wants to buy a camera in Japan for 50,000 JPY. If the exchange rate is 1 USD = 112 JPY, how much will Emi pay in USD?

32 Takashi exchanged 1,000 USD to JPY and received 111,000 JPY. What was the exchange rate?

33 Yuki is traveling from Japan to Australia and wants to convert 200,000 JPY to AUD. If the exchange rate is 1 AUD = 85 JPY, how many AUD will Yuki receive?

34 Raj is traveling from India to the United Kingdom and wants to exchange 50,000 Indian rupees (INR) to GBP. If the exchange rate is 1 GBP = 100 INR, how many GBP will Raj receive?

35 Priya wants to buy a saree in India for 5,000 rupees. If the exchange rate is 1 USD = 75 INR, how much will Priya pay in USD?

36 Sanjay exchanged 1,000 USD to rupees and received 75,000 INR. What was the exchange rate?

37 Neeta is traveling from India to Canada and wants to convert 10,000 INR to Canadian dollars (CAD). If the exchange rate is 1 CAD = 55 INR, how many CAD will Neeta receive?

38 Sarah purchases an NFT for 0.05 Ethereum (ETH). If the exchange rate is 1 ETH = $2,500, what is the cost of the NFT in USD?

39 David buys an NFT for 0.1 Bitcoin (BTC). If the current Bitcoin price is $40,000 per BTC, what is the cost of the NFT in USD?

40 Emily purchases an NFT for 800 EUR. If the current exchange rate is 1 EUR = 1.15 USD, what is the cost of the NFT in USD?

2.7 Renting v. Buying

Deciding whether to rent or purchase a property or a car is a major decision that will require you to carefully evaluate various factors. Here are some key considerations you should keep in mind when deciding between buying and renting.

Financial Considerations

- Affordability: Assess your financial situation, including upfront costs, ongoing payments, insurance, taxes, maintenance expenses and employment/income stability. Determine if purchasing fits within your budget or if renting offers a more manageable financial arrangement.

- Long-term Costs: Consider the overall costs of ownership, including depreciation, interest rates, repairs, and potential resale value. Compare these costs with the fixed rental payments and potential rental rate increases.

Practical Considerations

- Usage and Duration: Evaluate your intended usage and the expected duration of ownership or rental. If you need long-term, consistent access, purchasing may be beneficial. Conversely, if your needs are temporary or sporadic, renting might be a more suitable option.
- Flexibility: Assess the level of flexibility required. Renting provides the advantage of easily changing or upgrading to suit evolving needs, while ownership offers stability and customization options.

Personal Preferences and Lifestyle

- Customization: Consider the importance of personalizing the item to your preferences. Ownership allows for customization, whether it's modifying a home or vehicle, whereas renting may have restrictions.
- Responsibilities: Reflect on the responsibilities associated with ownership, such as maintenance, repairs, and managing property or vehicle-related tasks. Renting typically relieves individuals of these responsibilities, offering a hassle-free experience.

Future Considerations

- Investment Potential: Weigh the potential investment value and future financial returns. Purchasing property or a vehicle may offer the opportunity for equity or appreciation, while renting offers flexibility but no ownership benefits (unless it is a rent-to-own type of contract).

- Life Changes: Anticipate circumstances such as a job relocation, change in employment status or even a lifestyle adjustment when starting a family. Assess how these factors might impact your decision and whether owning or renting can accommodate these changes effectively.

Analyzing these factors will help you make a well-informed choice that aligns with your current circumstances, long-term goals, and desired lifestyle. Remember, there is no one-size-fits-all answer, and the best decision will ultimately depend on individual circumstances and priorities.

Now, let's try the following questions.

1. Adam is deciding between purchasing a car for $25,000 or renting a car for $400 per month. If he plans to keep the car for 5 years, which option costs less (based solely on the information provided)?

2. Jessica is deciding between purchasing a used textbook for $60 or renting it for $1.20 per week. If she needs the textbook for 52 weeks, which option costs less?

3. Isabella is deciding between purchasing a dress for $79.99 or renting it for $13.50 per occasion. If she plans to wear the dress 6 times, which option is more financially sensible?

4. John is considering purchasing a smartphone for $800 or renting it for $40 per month. If he plans to use the phone for 2 years, which option is more cost-effective, based solely on this information?

5. Sarah is deciding between purchasing a power tool for $200 or renting it for $15 per day. If she needs the tool for 10 days only, which option is more financially sensible?

Let's Explore

6 Buy or Lease a Car?

Monthly lease payment: $300
Lease term: 48 months
Lease cost: $300 x 48 = $14,400

Car purchase price: $25,000
Down payment: $5,000
Loan Amount: $25,000 - $5,000 = $20,000
Loan term: 48 months
Interest rate: 5%

Think about the pros and cons of buying or leasing a car in this scenario.

7 Buy or Lease Property?

Monthly rent: $1,500
Lease term: 12 months
Total lease cost: $1,500 x 12 = $18,000

Property purchase price: $300,000
Down payment: $60,000
Loan Amount: $300,000 - $60,000 = $240,000
Loan term: 30 years
Interest rate: 4%

Think about pros and cons of buying or leasing a property in this scenario.