

FOCUS AREA

2

MARKETS

Focus

The focus of this topic is how markets operate, both in theory and practice. The main concepts are demand, supply, the price mechanism and market failure.

Syllabus outcomes

A student:

- ▶ uses economic terms, concepts and principles in a range of contexts ECO-11-01
- ▶ explains the economic role of individuals, businesses, institutions and government ECO-11-02
- ▶ explains the role and operation of markets in the Australian and global economy ECO-11-03
- ▶ explains the causes of economic issues and their consequences for individuals, businesses, government and the economy ECO-11-04
- ▶ discusses the perspectives of individuals, businesses, institutions and government on a range of economic issues ECO-11-05
- ▶ discusses policy measures to address economic issues in actual or hypothetical contexts ECO-11-07
- ▶ analyses data for patterns and relationships to support economic arguments and decision-making ECO-11-08
- ▶ applies mathematical concepts, formulas and techniques in economic contexts ECO-11-09
- ▶ communicates economic ideas and information in a range of forms appropriate to purpose and audience ECO-11-10

Key skills

In Focus Area 2, Key skills boxes explain how to:

- ▶ Construct and interpret demand and supply schedules and graphs
- ▶ Interpret demand and supply graphs for price elasticity of demand and supply
- ▶ Calculate price elasticity of demand using the percentage method formula
- ▶ Interpret demand and supply graphs that demonstrate negative externalities from production and positive externalities from consumption



FOCUS AREA 2

Introduction

Markets provide the answer to the fundamental economic problem of unlimited wants and scarce resources identified in Focus Area 1. They do this by bringing together the decisions of millions of individual consumers and producers, each pursuing their own self-interest, and coordinating them through price. No single person or organisation needs to plan what quantity of bubble tea, petrol or housing an economy requires. Instead, the interaction of demand and supply generates a price that signals scarcity, rewards efficient production and allocates goods and services to those who value them most.

Understanding how this process works, and when it breaks down, is essential to understanding how a market economy functions. The following four chapters build that understanding in stages. We begin by examining demand and supply separately, before bringing them together to explain how markets reach equilibrium and how the degree of competition between producers shapes market outcomes.

We conclude by examining the circumstances in which markets fail to deliver efficient or equitable outcomes, and the tools governments use to address these failures. Together, these chapters provide the analytical foundation for studying economics. Concepts such as elasticity, market structure and market failure will reappear throughout your study of the Australian and global economy.

As you work through this topic, keep sight of the bigger picture: the price mechanism is a remarkably effective tool for allocating scarce resources, but it is not perfect and understanding its limitations is just as important as understanding its strengths.

Chapter 4: Demand examines the behaviour of consumers in a market. It introduces the law of demand, the demand curve and the non-price factors that cause demand to shift. The chapter concludes by exploring price elasticity of demand, a key tool for understanding how sensitive consumers are to price changes.

Chapter 5: Supply turns to the behaviour of producers. It introduces the law of supply, the supply curve and the factors that cause supply to shift. As with demand, the chapter examines price elasticity of supply and the factors that determine how responsive producers are to price changes.

Chapter 6: Market equilibrium and market structures brings demand and supply together to show how markets reach equilibrium, and how equilibrium price and quantity respond to changes in market conditions. It then looks beyond the simplified model of pure competition, examining how different market structures, the degree of market concentration and technological innovation affect prices, output and consumer outcomes.

Chapter 7: Market failure examines the circumstances in which the price mechanism fails to allocate resources efficiently or equitably. It covers externalities, public goods, the abuse of market power, asymmetric information and inequality, before considering the policy tools governments use to address these failures and the limitations of government intervention itself.

Demand

- 4.1 The role of markets
- 4.2 The law of demand
- 4.3 Movements along the demand curve
- 4.4 Shifts of the demand curve
- 4.5 Price elasticity of demand
- 4.6 Factors affecting the price elasticity of demand
- 4.7 How price elasticity of demand matters

4.1 The role of markets

Australia's economy involves a constant exchange of information between different actors in the marketplace, such as buyers, sellers, producers and consumers. Markets have evolved throughout Australian history. Before European colonisation, Aboriginal and Torres Strait Islander peoples engaged in extensive systems of production, exchange and trade governed by custom, ceremony, kinship and social obligations. As markets developed over time, exchange between strangers became more common and the price mechanism played a greater role in what was produced and how goods and services were exchanged.

A **market** is a network of buyers and sellers seeking to exchange a particular product at a certain price. This occurs through the **price mechanism**, which is the process by which the forces of demand and supply interact to determine the market price at which goods and services are sold, as well as the quantity produced.

You can see the **price mechanism** in action on your phone with how prices are set for ride-sharing apps such as Uber. At certain times, a much larger number of people want to find a ride – such as when a major sports event or concert ends, or on New Year's Eve. This increase in demand for rides forces up prices, as passengers compete for the limited number of drivers. Because they can provide rides at a higher price, more drivers will be encouraged to log on to the system and offer rides. The example of surge pricing on ride-sharing apps shows how the price mechanism conveys the wishes of passengers to drivers (i.e. from consumers to producers, or buyers to sellers). Passengers want more rides, and this is communicated to drivers through a movement in price. Similarly, a decrease in the demand for rides as crowds diminish will have the opposite effect. It will lead to a lowering of price, and drivers will start logging off the system and not providing rides.

Relative prices play specific functions in the price mechanism involving price signals, incentives and rationing:

- **Price signals:** Changes in price convey information to buyers and sellers, leading them to adjust their behaviour. A rising price sends two signals – one to producers and one to consumers. To producers, it sends the message to increase production (such as convincing more drivers to log on to their ride-sharing app and offer rides). To consumers, it sends a message that encourages them to reduce the quantity they are demanding, such as by switching to substitutes (in the example above, this might mean convincing people to walk, wait or use public transport instead). The change in price is the signal that coordinates the behaviour of large numbers of buyers and sellers who might not even know about the reason for the price change.
- **Incentives:** While the price signal tells consumers and producers that something has changed, incentives motivate them to act on that information. An incentive is a financial reward or penalty that influences the decisions of producers and consumers. In the ride-sharing example, higher ride prices can increase drivers' earnings, giving them the incentive to log on to their app and offer rides. Falling prices work in reverse. The incentive function allows the self-interested behaviour of producers and consumers to create an efficient market outcome. Without incentives, price signals would provide information to the market but would not change people's behaviour.
- **Rationing:** Rationing is the process by which a scarce resource is allocated among competing users. In a market economy, the price mechanism performs a rationing function: when demand exceeds supply, the price rises until some consumers are priced out of the market, leaving only those consumers who are willing and able to pay the higher price. In this way, the price mechanism determines not only what is produced and how much, but also who receives the goods and services.

Markets function because they tap into some powerful dimensions of human behaviour and psychology. The behaviour of participants in markets is usually guided by their **self-interest**. Consumers aim to maximise their satisfaction, or utility, through the purchases of goods and services. Their desire for value drives them to seek out the best products while rejecting inferior products. Producers aim to maximise their profits, and this profit motive leads them to supply what consumers want, to innovate in production and to keep costs low. The price mechanism channels self-interested individual motivations so that the economy's resources are directed towards the things that people most value.

The concept of self-interested economic behaviour is sometimes misunderstood as suggesting that selfishness motivates individuals' conduct in an economy. In fact, the famous economist Adam Smith, who was also a moral philosopher, never argued that humans were purely selfish in how they behave. While selfishness involves pursuing your own gain at the expense of other people, self-interest involves a person pursuing the things that they value the most. In other words, the price mechanism assumes that people have goals and act to achieve them – but not that those goals are only selfish.

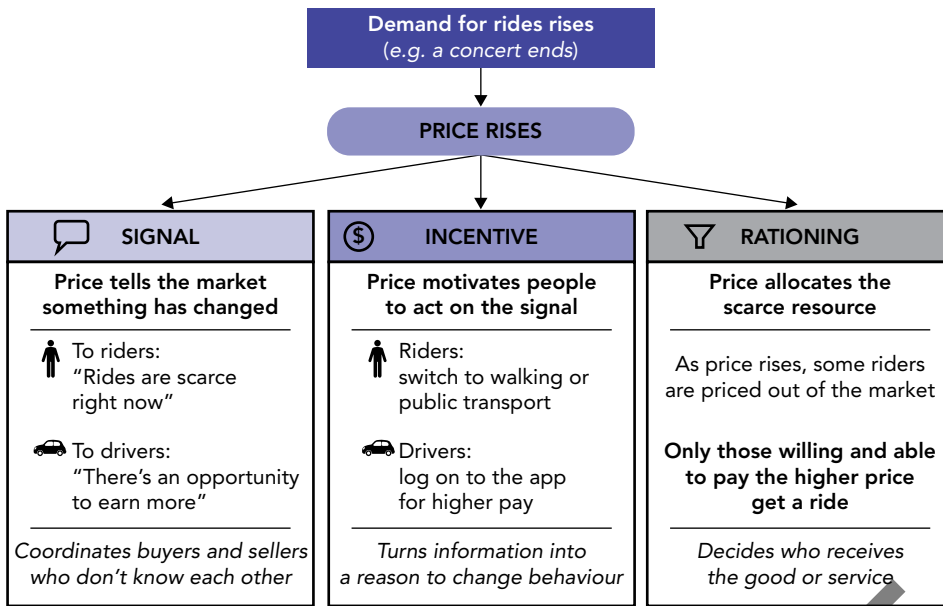
The assumption of self-interest is also a simplification, since not all economic behaviour can be attributed to self-interest. In addition to pursuing their self-interest, people may be influenced by habit, values, social norms, their sense of fairness and their expectations of other people's behaviour. For example, a consumer may refuse to buy a cheaper item if they believe that people were harmed in its production. While the price mechanism describes how markets function, it does not attempt to fully describe *every* aspect of human motivations.

For markets to function, buyers and sellers must be confident that each party will keep their side of the bargain. The buyer must feel confident that the seller will hand over what was promised, and the seller must be confident that the buyer will pay what they promised. This requires **institutions** that develop and enforce rules that consumers and producers must follow in the marketplace. It also requires that private property rights are protected.



How Relative Prices Coordinate a Market

The ride-sharing example: what happens when demand for rides rises



Together, signal, incentive and rationing coordinate millions of buyers and sellers – without anyone needing to plan it.



The **rule of law** is the principle that rules apply equally to everyone participating in a market, and these rules are enforced by courts and other institutions. The rule of law ensures that people can be confident that when they make an agreement (or a contract) to buy or sell something, this agreement will be honoured, and that if there is a dispute it will be resolved fairly. Without this confidence, individuals might behave in selfish ways that cause harm to others, such as taking goods without paying for them, taking money without providing goods, or providing faulty goods. If this kind of behaviour became widespread, people might lose confidence that agreements will be honoured, and fewer transactions would take place because of these risks.

Central to the rule of law is the **enforcement of contracts**. A contract is a legally binding agreement between two or more market participants. If contracts are enforced fairly by independent institutions such as courts or regulators, consumers and producers will have the confidence to make commitments to engage in market activities such as buying, selling, producing and investing.

Both consumers and producers rely on contracts. A producer who agrees to supply a certain quantity of goods at a specific price relies on a contract to receive payment, while the consumer relies on the contract to ensure that the goods will be delivered. Markets function less efficiently if buyers and sellers cannot rely on contracts being enforced, because trust must instead be built through costly alternatives such as directly monitoring the other party's behaviour, relying on reputation, or trading only within trusted networks. In contrast, if contracts are enforced fairly, strangers will have the confidence to trade with each other.

The **enforcement of property rights** is another aspect of the rule of law that is essential for markets to function effectively. Property rights define ownership and the rights to use and transfer assets. Property rights allow for incentives, such as a producer being confident that they will own the profits from production – for example, a musician is unlikely to invest time and resources in recording music if they cannot own the rights to the recording. Property rights are essential to facilitating exchange between buyers and sellers, since a buyer will only buy something if they know they will legally receive and own it.

It is easy to take the rule of law for granted, but there are many countries where buyers and sellers do not have the same level of confidence in rules being enforced as we do in Australia. Economic activity tends to be weaker in countries where the rule of law does not function well – for example, where crime is more common, laws are not enforced, officials can be easily bribed or governments can take property without compensating owners.

Product and factor markets

A **product market** is a market in which the supply of goods and services by firms meets the demand from households and other buyers.

A **factor market** is a market in which businesses purchase the primary inputs to production – natural resources, labour, capital and enterprise.

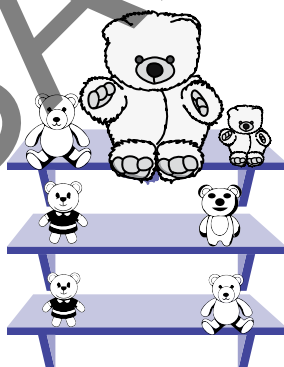
In the markets for goods and services, known as **product markets**, the buyers are the consumers, and they constitute the demand for products. Businesses supply the goods and services offered in these markets. Price is especially important in product markets because it affects both the level of consumer demand and the level of supply by the businesses. Consumers want to buy at the lowest possible price so that they can satisfy more of their wants, whereas firms want to sell at the highest possible price so that they make as much profit as possible. In the market economy this **price mechanism** brings demand and supply together to determine the price for each good and service (the price at which goods and services are actually bought and sold).

Changes in demand and supply in the product market will also influence demand and supply in **factor markets**, which are the markets for the inputs into the production process. For example, if consumer demand for air conditioners increases during an especially hot summer, producers will need extra factors of production to increase supply (inputs such as plastics, metals and skilled labour). In order to attract resources away from other areas of production, manufacturers will need to offer higher prices for them (for instance, offering higher wages to attract more workers). In this way the price mechanism also influences the way in which resources are allocated in the economy.

4.2 The law of demand

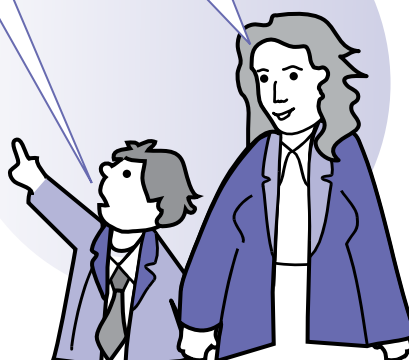
Markets function through the interaction of demand and supply. This chapter focuses on demand, which is defined as the quantity of a particular good or service that consumers are willing and able to purchase at various price levels at a given point in time. The demand of each individual consumer for a particular good or service is known as their **effective individual demand**.

Effective individual demand is different from an individual's wants because it involves not just the desire for a good or service, but also the **willingness and ability** to purchase it. A person is willing to pay at a particular price when, given their preferences, the good or service is worth the price to them. A person becomes more willing to purchase goods or services at lower prices, as they are cheaper relative to other goods. They also have the ability to buy the good or service when they have the purchasing power (i.e. the money) to transact with a seller.



I DEMAND that big fluffy toy!

Well, technically speaking, Ralph, you don't. Economists distinguish between a *want* – which you certainly have – and *demand*. Market demand requires people to be both willing and able to pay. You're seven. You have no income, no wealth, and no pocket money. That's a *want*, not *demand*. Now, let's go to the bookstore and I'll buy you a copy of ***The Market Economy*** so you won't make that mistake again.



Market demand is the total demand for a particular good or service within a market, which is derived by adding together the effective individual demand of all consumers. To understand how the market functions overall, economic analysis focuses on market demand.

In the analysis that follows, we use several assumptions to help us understand the nature of market demand. In the real world, demand is affected by several factors that are all changing at the same time, but it would be a difficult task if we had to analyse all of them at once. To avoid this, we focus on one factor at a time (for example, the price of the good) and analyse how demand changes in response to a change in that factor, while we assume that all the other factors that could affect demand remain constant. Economists call this the ***ceteris paribus*** assumption (*ceteris paribus* is a Latin phrase that means “other things being equal” or assuming that nothing else changes). The *ceteris paribus* assumption is often used in economic analysis to isolate relationships between particular variables. For example, we might say that if the price of a good falls, then, *ceteris paribus*, sales will increase.

Ceteris paribus is an assumption used in economics to isolate the relationship between two economic variables. It is a Latin phrase that means “other things being equal” or assuming that nothing else changes.

The demand schedule

Price is the most important factor that influences market demand for a good or service. This is reflected in a demand schedule, which is a table showing the quantity of a good that will be demanded over a range of prices at a given point in time. The market demand schedule is derived by summing the individual demand schedules of all consumers in the market.

Price (\$)	Quantity demanded (bubble tea)
5	300
6	250
7	200
8	150
9	100
10	50

Figure 4.1 ♦ Market demand schedule for bubble tea

The demand schedule assumes that all other factors remain constant except for price – in other words, factors such as consumer preferences, incomes and the prices of other goods do not change. Figure 4.1 shows a demand schedule for bubble tea over a given price range.

The demand schedule in figure 4.1 illustrates the typical relationship between price and quantity demanded, known as the **law of demand**. The law of demand states that as price rises, the quantity demanded in a market falls, and as price falls, the quantity demanded rises. When the price of a product is reduced, consumers will buy more of that product – first because they can afford to buy more, and second because it is cheaper than other goods and services. Therefore, more consumers are willing and able to buy the good or service at a lower price.

There are occasional exceptions to the law of demand. For example, some high-priced luxury items, such as designer handbags or watches, may experience an increase in quantity demanded as their prices rise, because they become a more sought-after status symbol. These so-called “Veblen goods” are discussed in chapter 8.



REVIEW QUESTIONS

- 1 Outline the difference and link between a want, effective individual demand and market demand.
- 2 Identify why we use the *ceteris paribus* assumption in economic analysis.
- 3 Explain the TWO reasons why the law of demand holds.



4.3 Movements along the demand curve



Figure 4.2 ♦ The demand curve for bubble tea

We can plot the data from the demand schedule onto a graph to show the law of demand in action.

Figure 4.2 depicts a demand graph, with price on the vertical axis and quantity demanded on the horizontal axis. Demand curves usually **slope downwards from left to right** (a negatively sloping demand curve). This illustrates the relationship between price and quantity demanded stated by the law of demand. As the price of a product increases, *ceteris paribus*, consumers will demand less of that product. For example, at \$5 demand for bubble tea is 300, whereas at \$10 it is only 50.

Movements along the demand curve

Assuming all other factors remain constant, any change in the price of a good will lead to a change in the quantity demanded in the opposite direction to the price change. What we observe due to price changes are movements along the demand curve, which we refer to as **expansions** and **contractions** in demand (as shown in figure 4.3).

From the diagram in figure 4.3:

- A contraction in demand occurs when an increase in price from $0P_1$ to $0P_2$ causes the quantity demanded to fall from $0Q_1$ to $0Q_2$.
- An expansion in demand occurs when a decrease in price from $0P_1$ to $0P_3$ causes the quantity demanded to rise from $0Q_1$ to $0Q_3$.

Only price changes for the good itself will lead to movements along the existing demand curve, through expansions and contractions in demand.

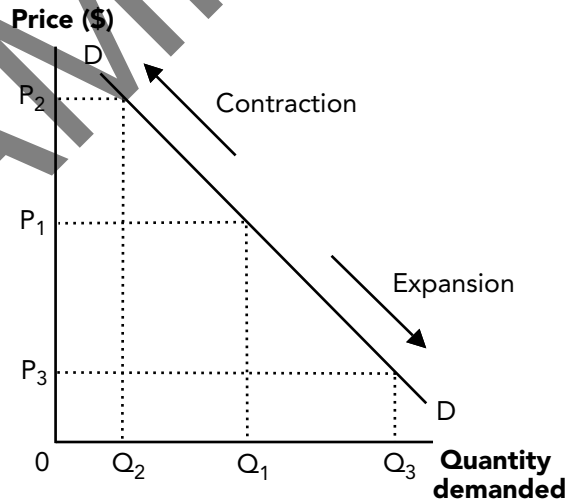


Figure 4.3 ♦ Expansions and contractions in demand

An **expansion of demand** occurs when a decrease in the price of a good or service increases the quantity demanded. It is shown by a downward movement along the demand curve.

A **contraction of demand** occurs when an increase in the price of a good or service reduces the quantity demanded. It is shown by an upward movement along the demand curve.



Key skills

Construct and interpret demand schedules and graphs

A demand schedule is a table that shows the quantity demanded at a range of prices. To construct a demand schedule, you will need to set up a table with two columns: one for quantity demanded and one for price. See example of a completed demand schedule below.

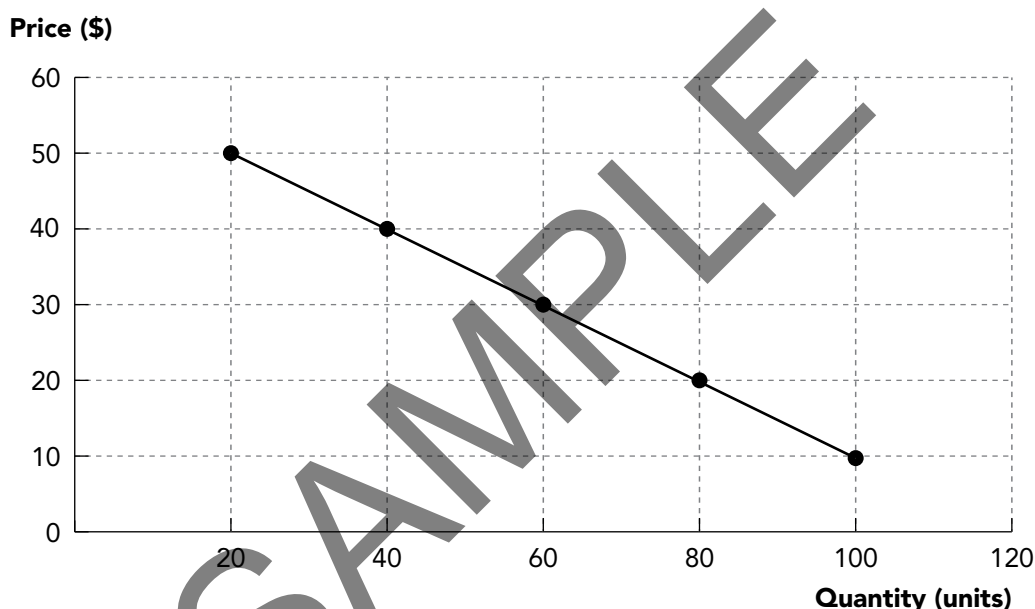
Price (\$)	Quantity (units)
10	100
20	80
30	60
40	40
50	20

Fill in your demand schedule with observed prices and quantities, starting with lower prices and working your way up. You should notice the law of demand at work here – as price rises, the quantity demand falls.

To interpret a demand schedule, read it in price and quantity pairings. For example, “at a price of \$10, the quantity demanded is 100 units” and so on.

To graph a demand curve, first label your vertical axis with price and your horizontal axis with quantity. Plot each of the points from your demand schedule and join each of the points. This will result in a demand curve, such as the one below.

You can interpret a demand curve by reading the price from the vertical axis and the corresponding quantity from the horizontal axis. Demand schedules and graphs are two different ways to present the same information.



TIP Demand graphs slope downwards from left to right, but they are not always straight lines. Demand graphs can be curved, and steeper or flatter in some sections than others.

Try out these skills

Create a demand schedule that follows the law of demand, and graph the corresponding demand curve. For an additional challenge, try creating a demand curve that is not linear.



REVIEW QUESTIONS

- 1 Explain the reason for negatively sloping demand curves.
- 2 Using a diagram, identify the movement along the demand curve caused by:
 - a a decrease in price
 - b an increase in price.

4.4 Shifts of the demand curve

Having examined the effect of price changes on quantity demanded, we can now turn our attention to the other factors that influence demand. These changes are reflected in a shift of the demand curve itself (either to the left or right), rather than a movement along the demand curve. Again, when we consider the effects of a change in one of these factors, we are applying the *ceteris paribus* assumption.

Other factors that influence demand

As income levels in the economy change, so too will demand. An increase in **incomes** will increase consumers' ability to purchase goods and services they could not previously afford, making them more willing and able to do so. Rising income levels will affect some items more than others. It is also relevant whether income levels are rising across the board, or whether specific groups are experiencing faster income growth than others. If incomes are growing faster among consumers with higher incomes, this is likely to have a greater effect on luxury goods and services. But if incomes are growing faster among lower-income earners, this is likely to have a greater impact on demand for regular goods and services.

The **size of the population** in an economy will affect the overall level of market demand, while its age distribution will affect the types of goods and services demanded. For example, with Australia's ageing population, one would expect higher demand for aged care services and other goods and services catering to older people.

As **individual tastes** change over time, so too will demand for goods and services. This can be driven by shifting social values – for example, growing concern about environmental sustainability has increased market demand for electric vehicles – or by innovation and technological progress, which lead consumers to demand new and better products at the expense of superseded ones.

The **prices of other goods and services** also influence market demand. Some goods and services are considered close substitutes, meaning individuals can use one in place of the other to satisfy a similar need or want, such as streaming services like Netflix and Stan. If the price of a substitute good rises, demand for the original good will increase as it becomes comparatively cheaper. Conversely, some goods and services are complements, meaning consumers tend to purchase them together as they are best used in conjunction with one another, such as a car and petrol. If the price of one complementary good rises, demand for the other good will tend to fall. The quantity demanded of the good whose own price rose will fall along its existing demand curve.

The current market demand for a particular good or service is affected not only by current prices but also by **expected future prices**. If individuals expect the price of a good or service to increase soon, they will bring forward their consumption, thereby increasing current demand for it. An example of this was farmers buying diesel fuel after the outbreak of the US–Iran war in early 2026, which blocked ships carrying diesel fuel from Middle Eastern producers. Diesel is used extensively for farming machinery involved in sowing and harvesting crops. The diesel fuel market saw a sharp increase in demand from farmers who were anticipating further price increases and potential fuel shortages in the months ahead.

A change in any of these other factors that can influence demand will shift the demand curve to the right or to the left, as consumers now demand either more or less at any given price level. These shifts are referred to as **increases** and **decreases** in demand and are brought about by changes in the non-price factors affecting demand, not by changes in the price of the good or service itself.



Increases in demand

A shift in the demand curve to the right is called an increase in demand. This is shown in figure 4.4. Because the change in demand is not due to a price change, we can make the following observations:

- First, an increase in demand means that consumers are willing and able to purchase more of the good or service at each possible price than before. At price OP_1 , consumers originally demanded OQ_1 units of the product. However, following an increase in demand (shifting the demand curve to the right from D_1D_1 to D_2D_2), consumers now demand more of the product (OQ_2) at the same price.
- Second, an increase in demand also means that consumers are willing to purchase a given quantity of the product at a higher price than before. Consumers were initially willing to pay OP_1 to obtain OQ_1 units of the product. However, following the increase in demand, consumers are now willing to purchase the same quantity (OQ_1) at a higher price (OP_2).

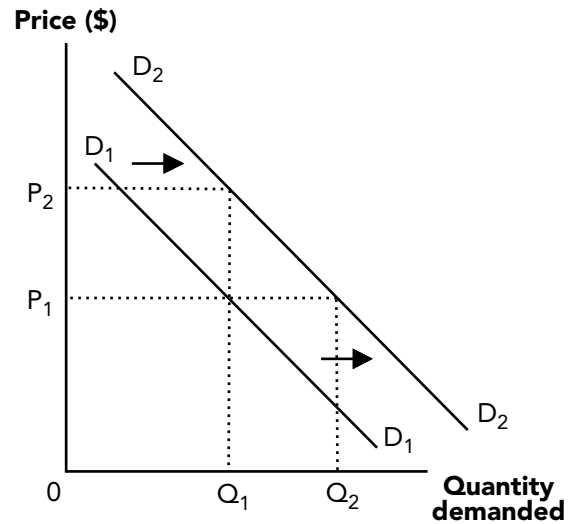


Figure 4.4 ♦ Increases in demand

Factors that may cause an *increase* in demand

Continuing the example of the market for bubble tea, an increase in demand might be caused by the following factors:

Prices of other goods and services

- A rise in the price of substitute goods will cause consumers to demand more bubble tea. If the price of energy drinks increased, more people would be willing to buy bubble tea, assuming the price of bubble tea remained the same.
- A fall in the price of a complementary good, such as popcorn chicken (which is often sold alongside bubble tea), may also increase demand for bubble tea.

Expected future prices

- Consumer spending is influenced by expectations about future price trends. If consumers expect that the price will increase because of a shortage of the tapioca pearls used in bubble tea drinks, they may bring forward a purchase and thereby increase the current demand for bubble tea.

Consumer tastes

- If bubble tea is featured prominently in a popular movie, it might introduce the drink to a wider range of consumers and result in higher market demand.
- If a new flavour of bubble tea is introduced and becomes popular, more consumers will want to buy bubble tea at every price level.

Consumer incomes

- A rise in the level of income would mean that consumers can afford to buy more bubble tea at the same price than they could before. As a result, the demand for bubble tea would tend to increase.
- A policy change that increases the disposable income of higher-income earners might increase the demand for the most expensive types of bubble tea.
- Improved consumer expectations about future income and employment prospects might increase demand for bubble tea.

The size and age distribution of the population

- An increase in the size of the population will increase the demand for bubble tea, while a change in the age distribution of the population over time might also affect demand, because of its popularity with younger age groups.



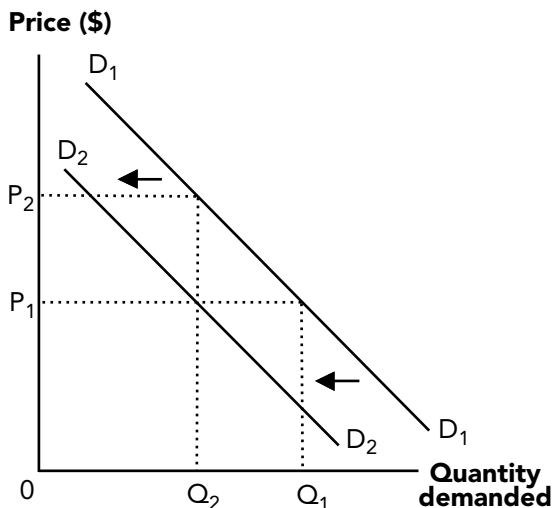


Figure 4.5 ♦ Decreases in demand

Decreases in demand

A shift in the demand curve to the left is called a decrease in demand. A decrease in demand (figure 4.5) means that consumers are willing and able to purchase less of the good or service at each possible price than before. At price $0P_1$, consumers originally demanded $0Q_1$ units of the product. However, following a decrease in demand (shifting the demand curve from D_1D_1 to D_2D_2), consumers demand less of the product ($0Q_2$) at the same price.

A decrease in demand also means that consumers are willing and able to purchase a given quantity of the product at a lower price than before. Consumers were initially willing to pay $0P_2$ to obtain $0Q_2$ units of the product. However, following the decrease in demand, consumers are only willing to pay a lower price ($0P_1$) to purchase the same quantity ($0Q_2$).

Factors that may cause a decrease in demand

The factors causing a decrease in demand are basically the opposite of those causing an increase.

Prices of other goods and services

- A fall in the price of substitute goods, such as energy drinks, will cause consumers to demand less bubble tea.
- A rise in the price of complementary goods, such as popcorn chicken, will tend to decrease demand for bubble tea.

Expected future prices

- An expected decline in the price of bubble tea in the future, perhaps due to new bubble tea stores opening and providing more competition, may lead consumers to delay their purchases, decreasing current demand.

Consumer tastes

- A health scare about the risks of drinking too much bubble tea, or bad hygiene practices in a chain of bubble tea stores, would reduce consumer demand for that product.

Consumer incomes

- A fall in the general level of income would reduce consumers' ability to purchase bubble tea, leading many to buy a cheaper drink or go without.
- A fall in incomes among higher-income earners may reduce demand for bubble tea at more expensive stores.
- Deteriorating consumer expectations about future income and employment prospects would decrease demand for bubble tea.

The size and age distribution of the population

- A decrease in the overall size of the population, or a change in its age distribution, such as a decline in the birth rate, may bring about a decrease in demand for bubble tea, given its popularity among younger age groups.





REVIEW QUESTIONS

- 1 Distinguish between an expansion of demand and an increase in demand.
- 2 Identify the change in demand for HD TVs caused by each of the following:
 - a a fall in the price of HD TVs
 - b the introduction of 8K Ultra HD TVs, with better screen resolution
 - c an expectation that the prices for TVs will fall
 - d the launch of a new low-cost, high-definition streaming service that makes movies available the same day as their cinema release.
- 3 Outline possible causes of a decrease in demand for each of the following goods and services:
 - a movie DVDs
 - b motor vehicles that run on petrol
 - c handmade knitted jumpers.

4.5 Price elasticity of demand

We have already discussed how changes in the price of a good or service can affect the quantity demanded. We will now take this one step further and examine the extent of these demand changes resulting from price changes.

The **price elasticity of demand** is a measure of how the quantity of a good or service demanded responds to a change in its price, expressed as the percentage change in quantity demanded resulting from a 1 per cent change in price.

Degrees of price elasticity of demand

Demand responds to price changes in different ways for different goods and services. For most goods, a fall in price will cause an increase in quantity demanded, but the degree to which quantity demanded responds to that price change will vary. If the increase in quantity demanded is proportionately greater than the fall in price, demand is said to be **relatively elastic**. Conversely, if the increase in quantity demanded is proportionately smaller than the fall in price, demand is said to be **relatively inelastic**. If the proportionate change in quantity demanded is equal to the proportionate change in price, demand is said to be **unitary elastic**.

We can also recognise two extremes of price elasticity of demand, **perfectly elastic demand** and **perfectly inelastic demand**.

When demand is perfectly elastic, consumers will buy any quantity offered at a given price, but nothing at all at a price above that. As such a situation does not exist in reality, it can be regarded as merely theoretical. However, if we consider an individual seller in a perfectly competitive market, where many sellers offer identical products, the consumer's demand would be almost perfectly elastic. No individual seller could charge a price higher than the market price, since they would lose all customers to others selling identical products for less. It would also not make sense for the individual seller to sell below the market price, as they could increase their price and increase revenue.

When demand is perfectly inelastic, consumers are willing to pay any price to obtain a given quantity of a good. Again, it would be very difficult to satisfy these conditions for any real-world market. It could, however, apply to some products across a given price range. For example, individuals with a life-threatening disease that can only be treated with a particular drug would be willing to pay almost any price to obtain it. It is often argued that governments should regulate such markets to prevent the exploitation of vulnerable consumers.

Price elasticity of demand measures the sensitivity of quantity demanded to a change in price. It is calculated as the percentage change in quantity demanded divided by the percentage change in price.



The degrees of elasticity of demand are outlined in this table:

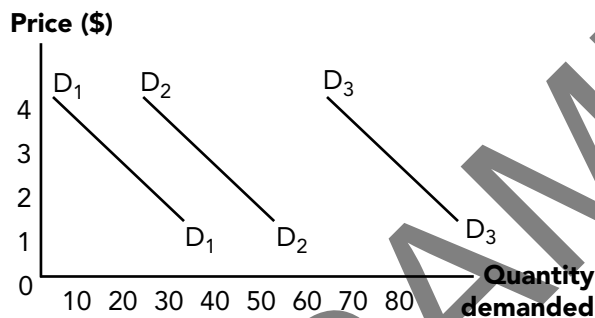
Perfectly elastic demand	Any increase in price causes quantity demanded to fall to zero (consumers will only purchase at one specific price)
Elastic demand	A strong response to a change in price
Unitary elastic demand	A proportional response to a price change (total amount spent by consumers remains unchanged)
Inelastic demand	A weak response to a price change
Perfectly inelastic demand	No response to a change in price (consumers purchase the same quantity regardless of price)

Key skills

Interpret demand graphs for price elasticity of demand

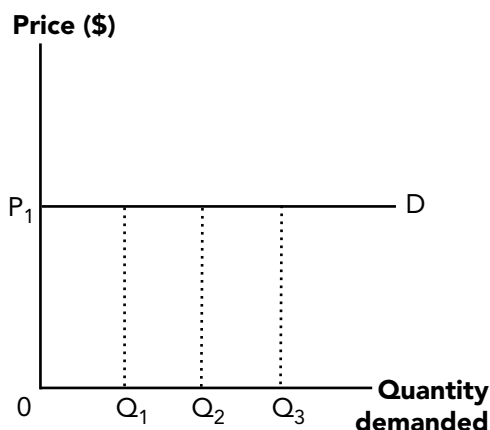
The slope of a demand curve should not be used as a *measure* of price elasticity of demand, because it is strongly influenced by the scale of the axis. The same data can look very different when we change the scale of the axis.

Three demand curves with the same slope but different positions from the origin can each represent a different price elasticity of demand.

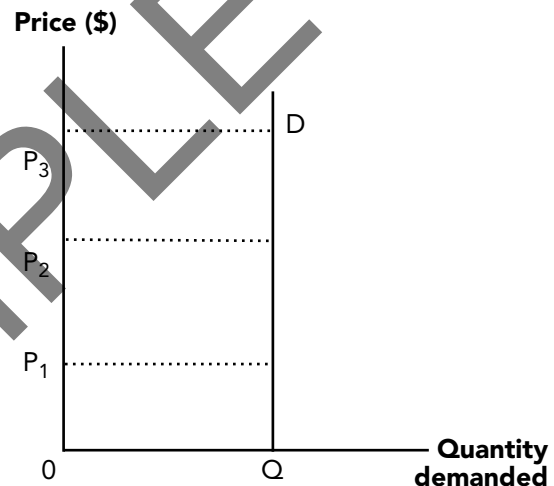


However, in the special cases of perfectly elastic and perfectly inelastic demand, the elasticity can be determined from the shape of the curve alone.

When demand is perfectly elastic, the demand curve is a horizontal straight line. This shows that consumers are willing and able to demand an unlimited quantity at a given price, but nothing at all at a price above this.



When demand is perfectly inelastic, the demand curve is a vertical straight line. This shows that consumers are willing and able to pay any price to obtain a given quantity of a good.



TIP Do not confuse a steep demand curve with perfectly inelastic demand, or a flat demand curve with perfectly elastic demand. Only a completely vertical line indicates perfectly inelastic demand, and only a completely horizontal line indicates perfectly elastic demand.

Try out these skills

Draw a demand curve for perfectly elastic and inelastic demand and explain how the shape of each curve reflects the difference in responsiveness to price changes, and why demand for each might behave that way.

While we can identify perfect elasticity visually from the shape of specific demand curves, in practice, it is useful to measure the responsiveness of quantity demanded to a price change more precisely. This allows us to quantify exactly how sensitive consumers are to price changes and to make informed comparisons between different goods and services.



Key skills

Calculate price elasticity of demand using the percentage method formula

The price elasticity of demand can be calculated using the following formula:

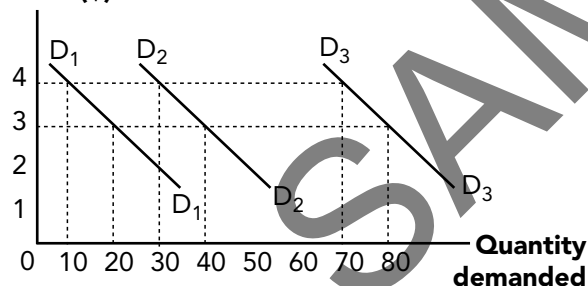
$$\frac{\% \text{ change in quantity demanded}}{\% \text{ change in price}}$$

This calculation measures whether the percentage change in quantity demanded is larger or smaller than the percentage change in price. Since price and quantity demanded move in opposite directions, the result will always be a negative number. For this reason, economists typically refer to the absolute value when interpreting the result:

- If the absolute value is greater than 1, the percentage change in quantity demanded is greater than the percentage change in price – demand is relatively elastic
- If the absolute value is equal to 1, the percentage change in quantity demanded is equal to the percentage change in price – demand is unitary elastic
- If the absolute value is less than 1, the percentage change in quantity demanded is smaller than the percentage change in price – demand is relatively inelastic

Consider three demand curves, with the same slope, with different price elasticities of demand.

Price (\$)



At a price of \$4, each curve gives a different quantity demanded:

- D_1D_1 gives 10 units,
- D_2D_2 gives 30 units, and
- D_3D_3 gives 60 units.

TIP When calculating the percentage change in price or quantity demanded, always divide the change by the original value, not the new value.

If the price falls to \$3, quantity demanded increases to:

- 20 units,
- 40 units, and
- 70 units

respectively. We can calculate the price elasticity of demand for each curve as follows:

- For D_1 :
 - % change in quantity demanded

$$= \frac{(20 - 10)}{10} \times 100 = 100\%.$$
 - % change in price

$$= \frac{(3 - 4)}{4} \times 100 = -25\%.$$
 - Price elasticity of demand

$$= \frac{100}{-25} = -4.$$
 - Absolute value = 4, therefore demand is relatively elastic.
- For D_2 :
 - % change in quantity demanded

$$= \frac{(40 - 30)}{30} \times 100 = 33.3\%.$$
 - % change in price = -25% (from above).
 - Price elasticity of demand

$$= \frac{33.3}{-25} = -1.33.$$
 - Absolute value = 1.33, therefore demand is relatively elastic.
- For D_3 :
 - % change in quantity demanded

$$= \frac{(70 - 60)}{60} \times 100 = 16.7\%.$$
 - % change in price = -25%.
 - Price elasticity of demand

$$= \frac{16.7}{-25} = -0.67.$$
 - Absolute value = 0.67, therefore demand is relatively inelastic.

This confirms that although all three curves have the same slope, each has a different price elasticity of demand.

Try out these skills

Calculate the price elasticity of demand of each curve when the price falls from \$3 to \$2. Are they different to when price falls from \$4 to \$3?





REVIEW QUESTIONS

- 1 Describe what is meant by relatively elastic demand and relatively inelastic demand.
- 2 Identify ONE good or service that might be close to perfectly elastic demand and ONE good or service that might be close to perfectly inelastic demand.

4.6 Factors affecting the price elasticity of demand

The price elasticity of demand for any good or service can be affected by one or more of five main factors.

Degree of necessity

Goods and services regarded as necessities of daily life, such as bread or milk, tend to have relatively inelastic demand. Even if prices rise, the quantity demanded will not fall significantly because it is difficult for consumers to go without these items. On the other hand, goods and services considered luxuries, such as dining at expensive restaurants, tend to have relatively elastic demand, as consumers can delay these purchases or go without them when prices rise.

Closeness and number of available substitutes

Goods and services with close substitutes tend to have relatively elastic demand. If the price of one brand of breakfast cereal increases, quantity demanded is likely to fall more than proportionately, since consumers would switch to another brand they perceive to be equally good. Conversely, goods and services with few or no close substitutes, such as the local water supply, tend to have relatively inelastic demand; even if prices rise, consumers cannot easily switch to an alternative product, so quantity demanded will not fall significantly.

The proportion of income spent on an item

Goods and services that represent a very small proportion of a consumer's income, such as a cheap pen or chewing gum, tend to have relatively inelastic demand; most consumers would not noticeably alter their purchasing behaviour in response to a price change. Conversely, goods and services that represent a larger proportion of income tend to have more elastic demand. For example, most consumers would not stop buying chewing gum because its price increased by 10 per cent, but they may well decide against buying a new car that has had a 10 per cent price rise.

The time horizon

The time horizon over which we measure demand also affects price elasticity. When the price of a good or service changes, consumers may not respond immediately, as it takes time to become aware of the change and adjust behaviour accordingly. Over a shorter time horizon, demand is therefore relatively inelastic. Over a longer time horizon, consumers have a greater opportunity to seek out substitutes, making demand more responsive to price changes. For example, if petrol prices rise, most consumers will in the short term continue to purchase petrol and drive because they have few immediate alternatives. In the long run, however, consumers may purchase a more fuel-efficient car, use public transport or move closer to work, making their demand for petrol more elastic.

It is worth noting that durable goods can be an exception to this pattern. In the short run, a rise in the price of new cars may initially make demand more elastic as consumers choose to repair existing vehicles rather than replace them, before becoming less elastic in the long run as replacing older vehicles becomes unavoidable.



Specific qualities such as addictiveness

Goods and services can sometimes have special qualities that influence their elasticity of demand. Some tobacco, alcohol and gambling products have relatively inelastic demand because addiction or dependency can reduce consumers' responsiveness to price changes. This also applies to addictive services such as gambling, where consumers might not be sensitive to price increases.



REVIEW QUESTIONS

- 1 Explain how the addictiveness of an item affects price elasticity of demand.
- 2 Explain how the time horizon over which a price change is measured affects the price elasticity of demand.
- 3 Considering the factors influencing the price elasticity of demand, analyse the elasticity for the following goods and services:
 - a laptop computers
 - b music streaming subscriptions
 - c public transport
 - d National Rugby League Grand Final tickets.

4.7 How price elasticity of demand matters

An understanding of the price elasticity of demand is particularly important for businesses because it influences decisions around setting prices, what quantity to produce and how much to differentiate a product from other similar products.

Pricing decisions

If a business understands the price elasticity of demand for its good or service, it is better informed in making pricing decisions. When demand is relatively inelastic, a business can raise prices without causing a proportionately large fall in quantity demanded, thereby increasing its total revenue. Conversely, if demand is relatively elastic, raising prices would cause a more than proportionate fall in quantity demanded, reducing total revenue. In this case, the business may find that lowering its price increases total revenue by attracting a proportionately greater increase in quantity demanded. Awareness of elasticity across different price ranges is therefore important for businesses in deciding their pricing strategy. This is why businesses often conduct market research to estimate the price elasticity of demand for their products.

Product differentiation

Businesses attempt to distinguish their products from competitors through branding, quality, design or unique features. If consumers perceive their product as unique or superior, the availability of close substitutes is effectively reduced, making consumers less sensitive to price changes. This means businesses can raise prices without it affecting sales as much. For example, businesses with a strong brand identity, such as Apple, may be able to charge a premium price without losing significant demand for their products. In this way, product differentiation is not only a response to existing price elasticity, but also a strategy to make demand more inelastic.



Output

Understanding price elasticity of demand also informs a business's output decisions. If demand is relatively inelastic, a business may choose to maintain or even reduce output while charging a higher price, since total revenue will increase despite the fall in quantity demanded. If demand is relatively elastic, the business may lower its price to attract a proportionately larger increase in quantity demanded, thereby requiring greater output to meet demand, all while raising total revenue.



REVIEW QUESTIONS

- 1 Explain why businesses take price elasticity of demand into consideration when making pricing decisions.
- 2 Analyse how the following businesses can use product differentiation to make demand for their products more inelastic:
 - a Apple (iPhones)
 - b Nike (sportswear)
 - c Qantas (domestic flights)
 - d McDonald's (fast food).



CHAPTER SUMMARY

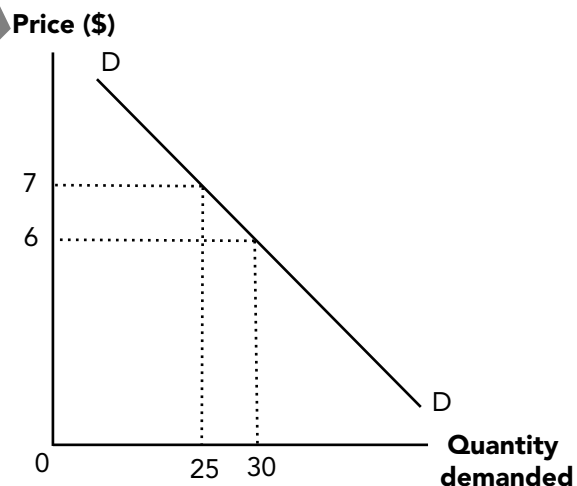
- 1 **Effective individual demand** is the quantity of a particular good or service that a consumer is willing and able to purchase at various price levels at a given point in time. This is distinguished from a mere want by a consumer having the willingness and ability to purchase.
- 2 The **law of demand** states that as the price of a good rises the quantity demanded will fall and vice versa.
- 3 In economic analysis, the ***ceteris paribus*** assumption allows economists to isolate the relationship between two variables by holding all other factors constant and seeing how change in one variable affects the other variable.
- 4 A **demand schedule** is a table showing the quantity of a good or service demanded at a given point in time over a range of prices. A demand curve is constructed by plotting the data from a demand schedule, with price on the vertical axis and quantity demanded on the horizontal axis.
- 5 **Movements along the demand curve** are caused by changes in the price of the good or service itself and are called expansions or contractions in demand. All other factors cause shifts of the demand curve, referred to as increases or decreases in demand.
- 6 The demand for a good is also influenced by a range of **non-price factors**, including the population, tastes, prices of substitutes and complements, and expected future prices.
- 7 The **price elasticity of demand** measures the responsiveness of quantity demanded to a change in price, expressed as the percentage change in quantity demanded resulting from a 1 per cent change in price.
- 8 **Demand elasticity** ranges from perfectly elastic, where any increase in price causes quantity demanded to fall to zero, to perfectly inelastic, where quantity demanded remains unchanged regardless of price.
- 9 The price elasticity of demand for a good or service is influenced by the degree of necessity, the closeness and number of available substitutes, the proportion of income spent on the item, the time horizon and the item's addictiveness.
- 10 Businesses use their understanding of price elasticity of demand to inform pricing decisions, product differentiation strategies and output levels, aiming to maximise total revenue.

CHAPTER REVIEW

- 1 Define what is meant by market demand.
- 2 Explain the meaning and cause of:
 - a a contraction in demand
 - b an expansion in demand.
- 3 From the following demand schedule, plot the market demand curve for mangoes and explain the relationship that exists between price and the quantity demanded.

Price (\$)	Quantity demanded (tonnes)
1	175
2	140
3	105
4	70
5	35

- 4 Explain (using diagrams) what is meant by:
 - a an increase in demand
 - b decrease in demand.
- 5 Draw a two-column table. On one side show the factors that can cause an increase in demand and on the other the factors that can cause a decrease.
- 6 Explain what is meant by price elasticity of demand.
- 7 When using the percentage method formula for measuring elasticity of demand, state the range of values of the calculation when:
 - a demand is elastic
 - b demand is inelastic
 - c demand is unitary elastic.
- 8 Use a diagram to demonstrate:
 - a perfectly elastic demand
 - b perfectly inelastic demand.
- 9 Give examples of market situations that might be close to perfectly elastic or perfectly inelastic demand.
- 10 Consider the following demand curve:
 - a Using the percentage method, determine the elasticity of demand over the price range of \$6 to \$7. Explain your answer.
 - b Draw a table with two columns as follows and summarise the factors affecting price elasticity of demand.



Characteristics of goods with elastic demand	Characteristics of goods with inelastic demand

Extended response

Explain what is meant by price elasticity of demand. Describe how we can measure the price elasticity of demand. Explain why an understanding of the price elasticity of demand is important to businesses.