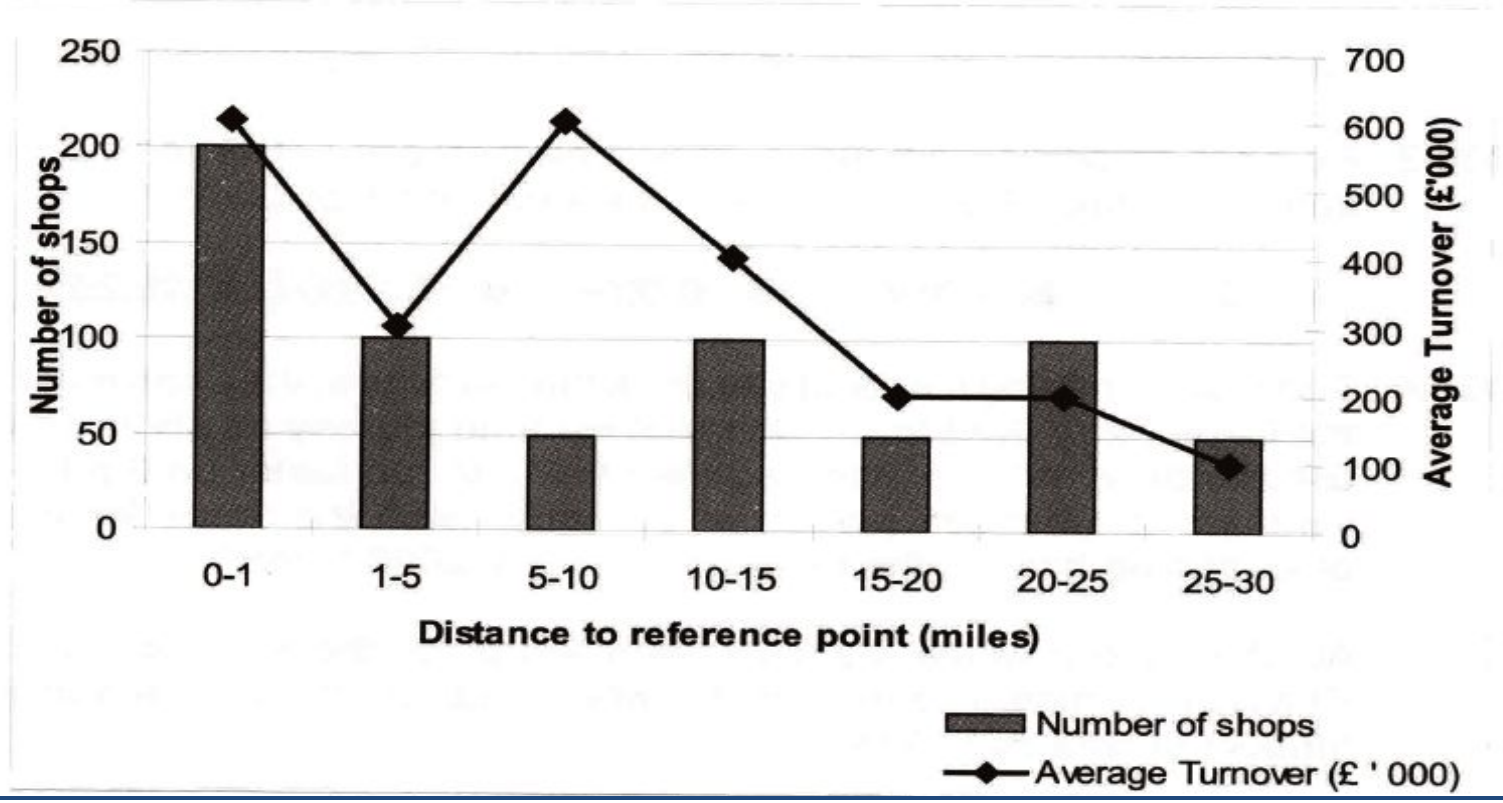
UCAT

Quantitative Reasoning 5

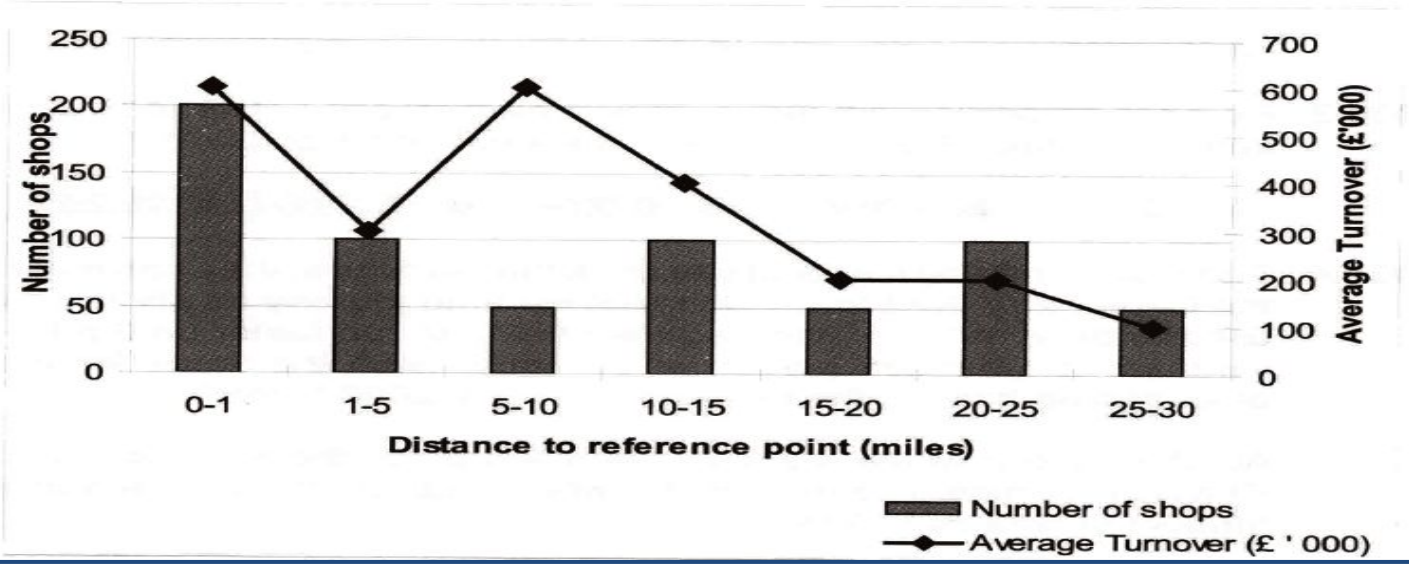
Within Shopping Distance(Q1 to Q7)

A local authority has carried out a survey of the number of shops present within its boundaries. The data consists of the number of shops and the average turnover (in thousands of pounds) plotted against the distance from the county's central town.



Q1)

A local authority has carried out a survey of the number of shops present within its boundaries. The data consists of the number of shops and the average turnover (in thousands of pounds) plotted against the distance from the county's central town.

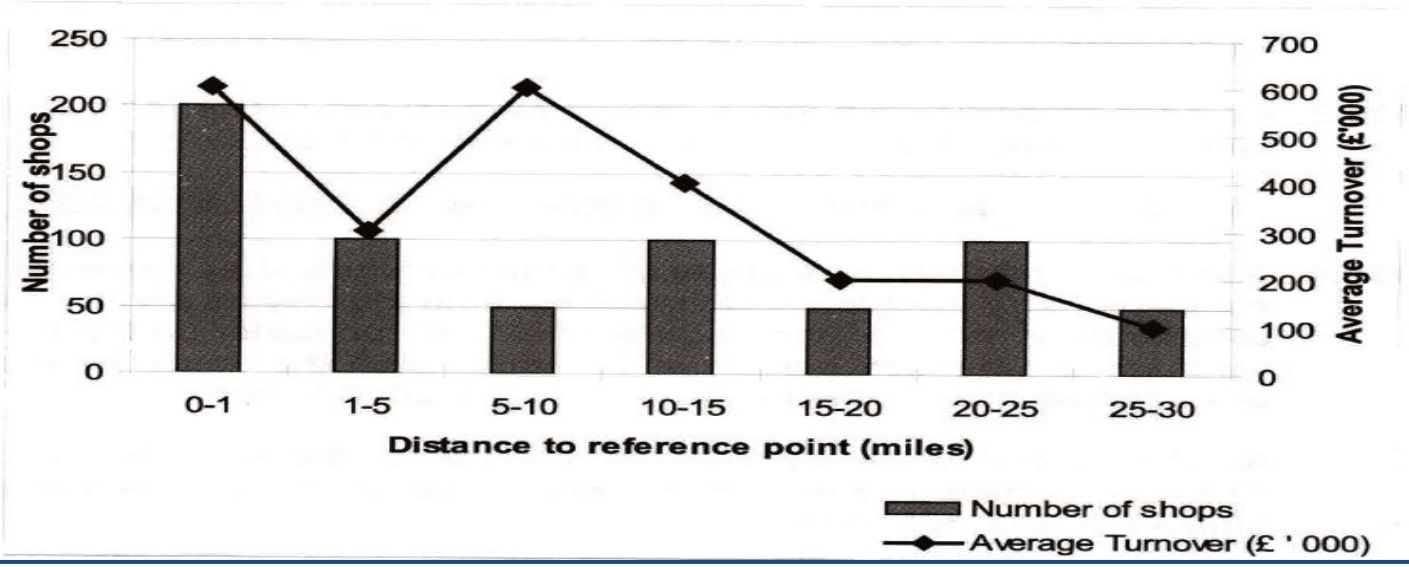


How many shops were counted in total by the local authority?

a. 450 **b.** 550 **c.** 600 **d.** 650 **e.** 700

Q2)

A local authority has carried out a survey of the number of shops present within its boundaries. The data consists of the number of shops and the average turnover (in thousands of pounds) plotted against the distance from the county's central town.

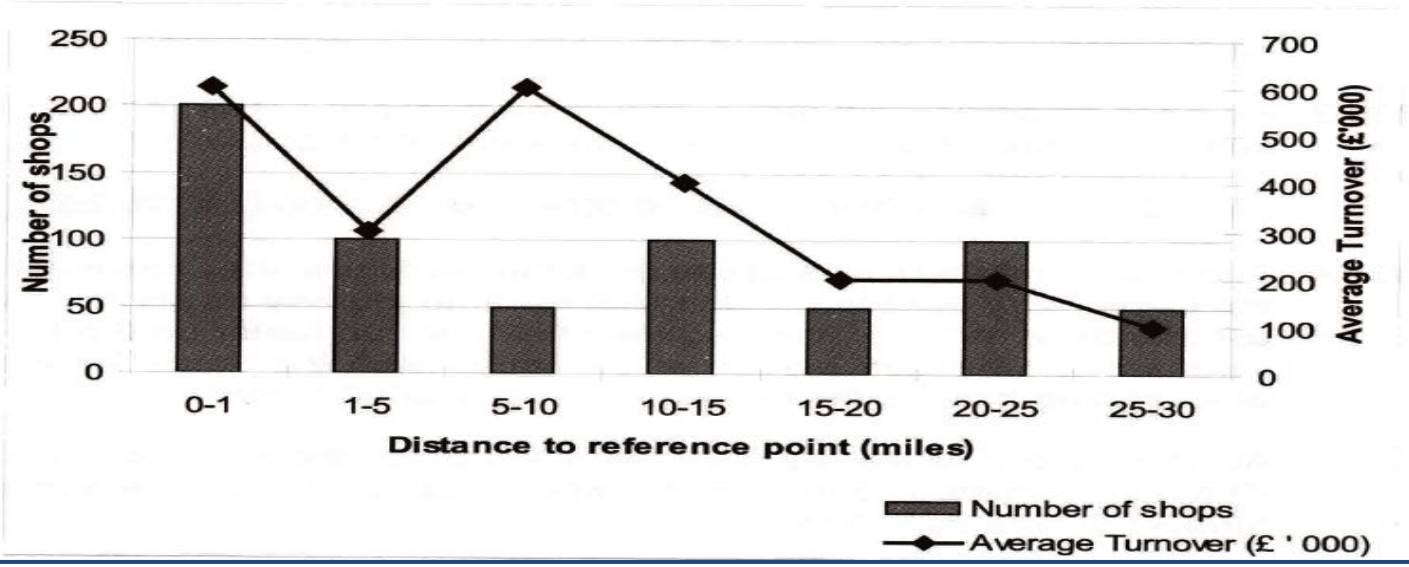


What is the total turnover of the shops located within a distance of 5 miles from the reference point?

a. £30,000 **b.** £120,000 **c.** £150,000 **d.** £30m **e.** £150m

Q3)

A local authority has carried out a survey of the number of shops present within its boundaries. The data consists of the number of shops and the average turnover (in thousands of pounds) plotted against the distance from the county's central town.

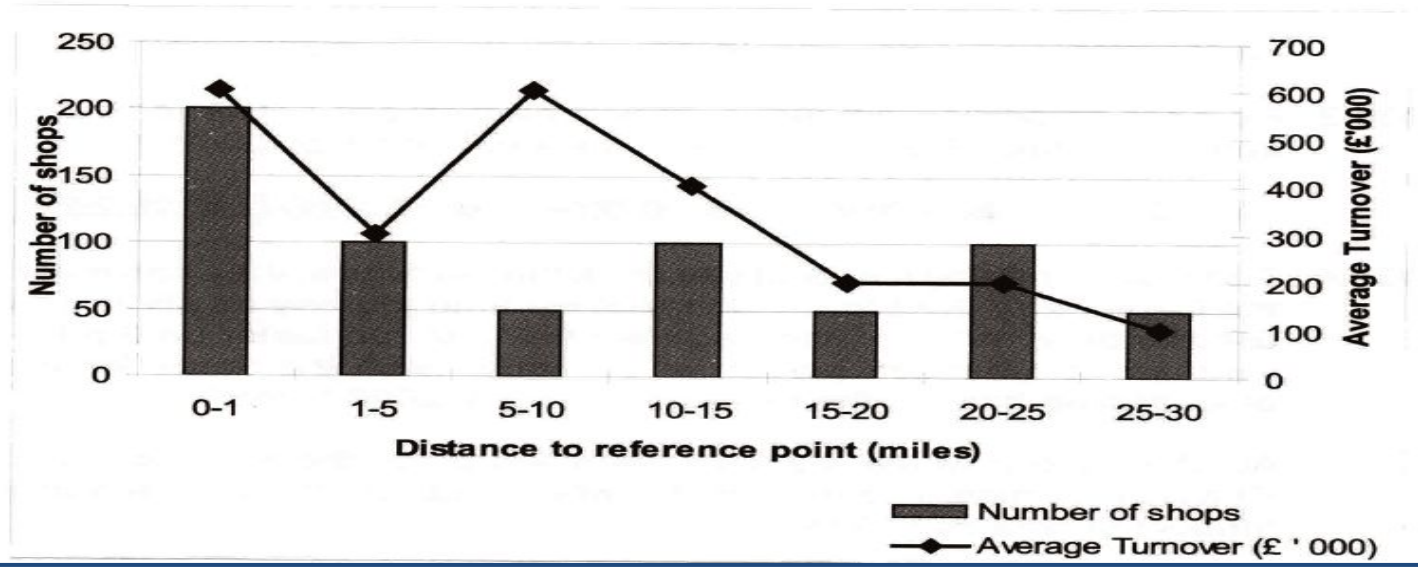


Which part of the county has the highest total turnover?

a. 0–1 **b.** 1–5 **c.** 5–10 **d.** 10–15 **e.** 20–25

Q4)

A local authority has carried out a survey of the number of shops present within its boundaries. The data consists of the number of shops and the average turnover (in thousands of pounds) plotted against the distance from the county's central town.

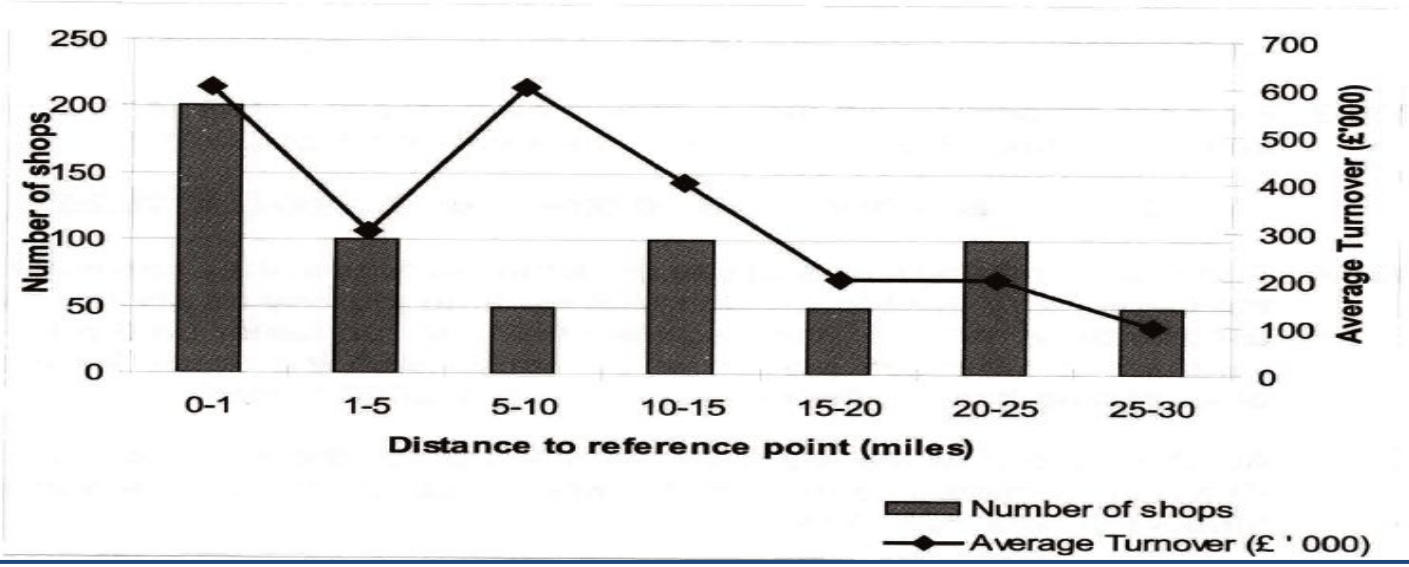


What proportion of total turnover is held by the shops within a 10-mile radius from the reference point?

a. 11.8% **b.** 33.3% **c.** 53.8% **d.** 67.5% **e.** 70.6%

Q5)

A local authority has carried out a survey of the number of shops present within its boundaries. The data consists of the number of shops and the average turnover (in thousands of pounds) plotted against the distance from the county's central town.



In the zone within 1 mile of the reference point, all shops must pay a business tax based on their turnover.

The business tax is calculated as follows:

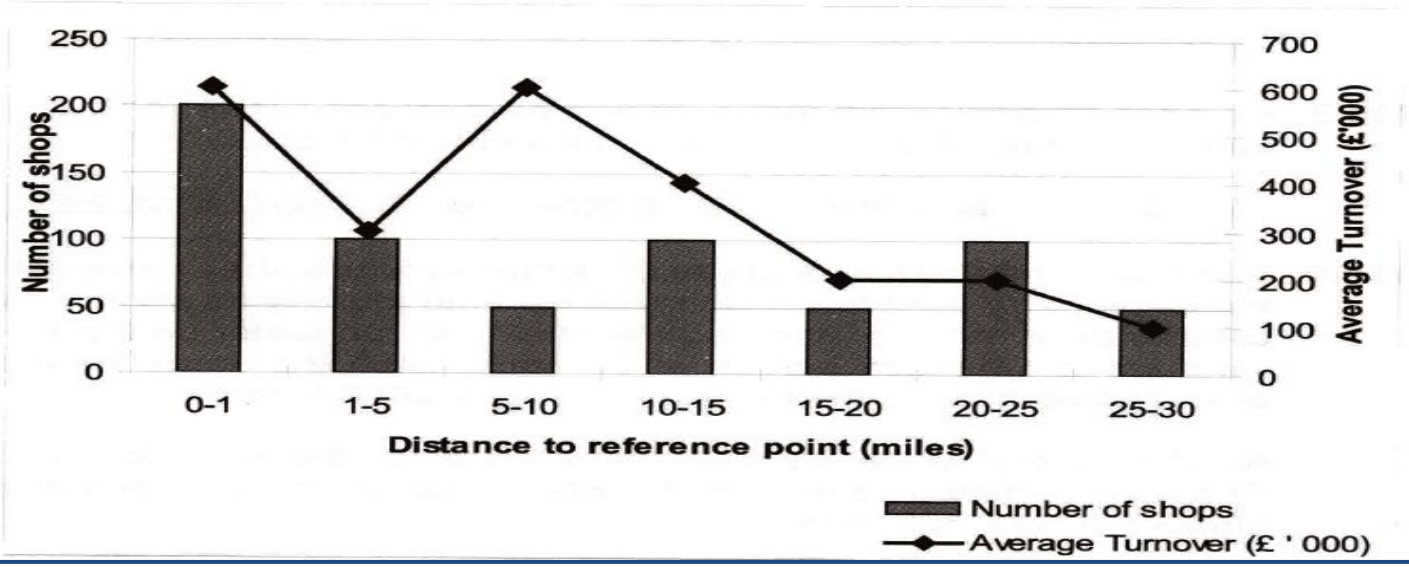
- 0.5% payable on the part of turnover up to £100,000
- 1% payable on the part of turnover above £100,000

Assuming that all shops within the zone have a turnover which is greater than £100,000, what is the average amount of tax collected per shop within the zone?

a. £5,500 **b.** £6,000 **c.** £6,500 **d.** £7,500 **e.** £8,000

Q6)

A local authority has carried out a survey of the number of shops present within its boundaries. The data consists of the number of shops and the average turnover (in thousands of pounds) plotted against the distance from the county's central town.

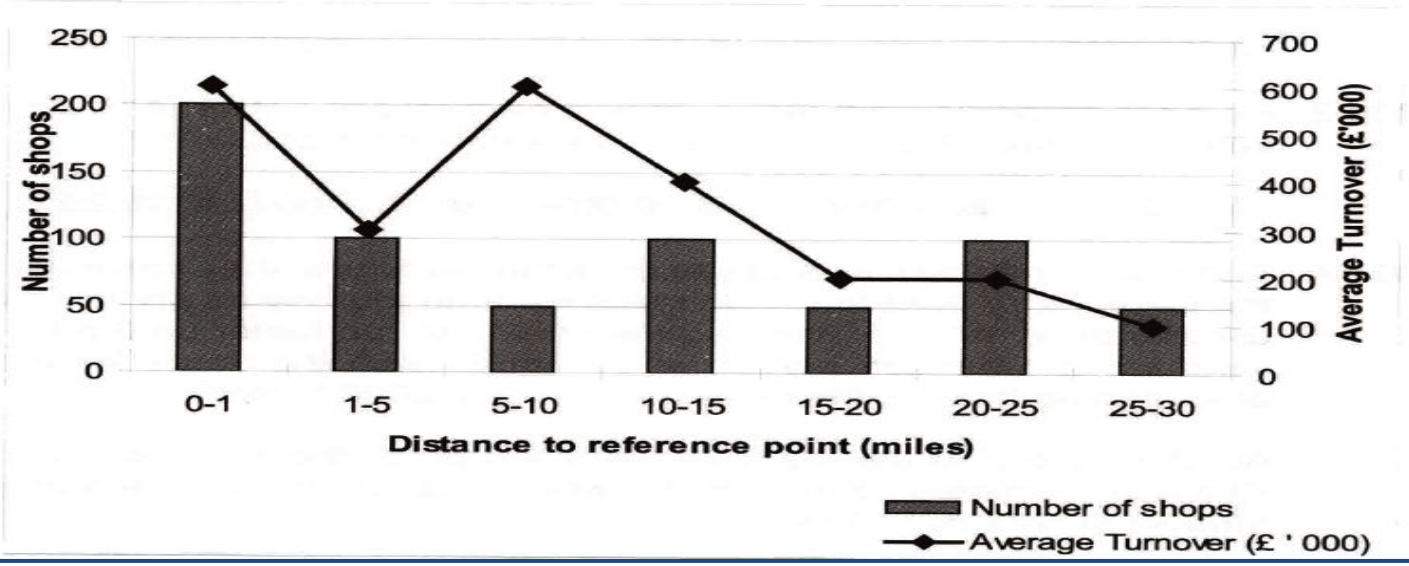


The council estimates that, with the recession, 20% of shops within a radius of 10 miles will close down whilst the number of shops beyond 10 miles will increase by 5%. What will be the number of shops left standing once the changes have taken effect?

a. 300 **b.** 350 **c.** 595 **d.** 607 **e.** 650

Q7)

A local authority has carried out a survey of the number of shops present within its boundaries. The data consists of the number of shops and the average turnover (in thousands of pounds) plotted against the distance from the county's central town.



A pensioner lives 12.5 miles away from the reference point. He can only drive a maximum of 7.5 miles in any direction. Assuming that all roads are straight lines and all shops are along those straight roads, how many shops can this pensioner visit?

a. 100 **b.** 150 **c.** 200 **d.** 325 **e.** Can't tell

Shaken, not Stirred(Q8 to Q13)

A local bar offers the following cocktails (all quantities expressed in ml):

	Tequila	Cointreau	Lemon Juice	Orange Juice	Vodka	White Rum	Vermouth	Gin
Tequila Sunrise	50			100				
Journalist		5	5				25	50
Screwdriver				50	50			
Balalaika		25	25		25			
Martini							25	50
XYZ		25	25			40		
Vodkatini					50		25	
Velocity							50	25
Orange Bloom		25					25	50
Long Island	25		25		25	25		25

Pure alcohol content for each drink

Drink	% of pure alcohol
Tequila	38%
Cointreau	40%
Lemon Juice / Orange Juice	0%
Vodka	45%
White Rum	40%
Vermouth	15%
Gin	43%

Q8)

A local bar offers the following cocktails (all quantities expressed in ml):

	Tequila	Cointreau	Lemon Juice	Orange Juice	Vodka	White Rum	Vermouth	Gin
Tequila Sunrise	50			100				
Journalist		5	5				25	50
Screwdriver				50	50			
Balalaika		25	25		25			
Martini							25	50
XYZ		25	25			40		
Vodkatini					50		25	
Velocity							50	25
Orange Bloom		25					25	50
Long Island	25		25		25	25		25

Pure alcohol content for each drink

Drink	% of pure alcohol
Tequila	38%
Cointreau	40%
Lemon Juice / Orange Juice	0%
Vodka	45%
White Rum	40%
Vermouth	15%
Gin	43%

What volume of vodka is required to make the following cocktails?

- 2 Screwdrivers
- 5 Balalaika
- 1 Long Island

a. 100 ml **b.** 150 ml **c.** 200 ml **d.** 250 ml **e.** 300 ml

Q9)

A local bar offers the following cocktails (all quantities expressed in ml):

	Tequila	Cointreau	Lemon Juice	Orange Juice	Vodka	White Rum	Vermouth	Gin
Tequila Sunrise	50			100				
Journalist		5	5				25	50
Screwdriver				50	50			
Balalaika		25	25		25			
Martini							25	50
XYZ		25	25			40		
Vodkatini					50		25	
Velocity							50	25
Orange Bloom		25					25	50
Long Island	25		25		25	25		25

Pure alcohol content for each drink

Drink	% of pure alcohol
Tequila	38%
Cointreau	40%
Lemon Juice / Orange Juice	0%
Vodka	45%
White Rum	40%
Vermouth	15%
Gin	43%

What is the volume of pure alcohol contained within one Orange Bloom cocktail?

a. 35.00 ml **b.** 35.25 ml **c.** 35.50 ml **d.** 35.75 ml **e.** 36.00 ml

Q10)

A local bar offers the following cocktails (all quantities expressed in ml):

	Tequila	Cointreau	Lemon Juice	Orange Juice	Vodka	White Rum	Vermouth	Gin
Tequila Sunrise	50			100				
Journalist		5	5				25	50
Screwdriver				50	50			
Balalaika		25	25		25			
Martini							25	50
XYZ		25	25			40		
Vodkatini					50		25	
Velocity							50	25
Orange Bloom		25					25	50
Long Island	25		25		25	25		25

Pure alcohol content for each drink

Drink	% of pure alcohol
Tequila	38%
Cointreau	40%
Lemon Juice / Orange Juice	0%
Vodka	45%
White Rum	40%
Vermouth	15%
Gin	43%

At the start of the night the barman realises that he only has 4 litres of orange juice at his disposal, all of which gets used during the night. The bar till shows that during that night only 8 Tequila Sunrise cocktails have been sold and that no one was served orange juice on its own. How many Screwdrivers were sold that night?

a. 32 **b.** 48 **c.** 56 **d.** 64 **e.** 72

Q11)

A local bar offers the following cocktails (all quantities expressed in ml):

	Tequila	Cointreau	Lemon Juice	Orange Juice	Vodka	White Rum	Vermouth	Gin
Tequila Sunrise	50			100				
Journalist		5	5				25	50
Screwdriver				50	50			
Balalaika		25	25		25			
Martini							25	50
XYZ		25	25			40		
Vodkatini					50		25	
Velocity							50	25
Orange Bloom		25					25	50
Long Island	25		25		25	25		25

Pure alcohol content for each drink

Drink	% of pure alcohol
Tequila	38%
Cointreau	40%
Lemon Juice / Orange Juice	0%
Vodka	45%
White Rum	40%
Vermouth	15%
Gin	43%

Out of the five following cocktails, which one contains the smallest volume of alcohol?

a.Martini **b.**Vodkatini **c.**Velocity **d.**Orange Bloom **e.**Journalist

Q12)

A local bar offers the following cocktails (all quantities expressed in ml):

	Tequila	Cointreau	Lemon Juice	Orange Juice	Vodka	White Rum	Vermouth	Gin
Tequila Sunrise	50			100				
Journalist		5	5				25	50
Screwdriver				50	50			
Balalaika		25	25		25			
Martini							25	50
XYZ		25	25			40		
Vodkatini					50		25	
Velocity							50	25
Orange Bloom		25					25	50
Long Island	25		25		25	25		25

Pure alcohol content for each drink

Drink	% of pure alcohol
Tequila	38%
Cointreau	40%
Lemon Juice / Orange Juice	0%
Vodka	45%
White Rum	40%
Vermouth	15%
Gin	43%

Jane normally drinks one Balalaika at the start of the evening. Having got bored with it, she decides today to have an XYZ instead. What is the proportionate change in the volume of pure alcohol that she will consume when she switches to this new cocktail?

a. –42.2% **b.** –22.4% **c.** +15.0% **d.** +22.4% **e.** +42.2%

Q13)

A local bar offers the following cocktails (all quantities expressed in ml):

	Tequila	Cointreau	Lemon Juice	Orange Juice	Vodka	White Rum	Vermouth	Gin
Tequila Sunrise	50			100				
Journalist		5	5				25	50
Screwdriver				50	50			
Balalaika		25	25		25			
Martini							25	50
XYZ		25	25			40		
Vodkatini					50		25	
Velocity							50	25
Orange Bloom		25					25	50
Long Island	25		25		25	25		25

Pure alcohol content for each drink

Drink	% of pure alcohol
Tequila	38%
Cointreau	40%
Lemon Juice / Orange Juice	0%
Vodka	45%
White Rum	40%
Vermouth	15%
Gin	43%

During Happy Hour, the bar serves drinks in pitchers (jugs) of 1.5 litres. A group orders the following:

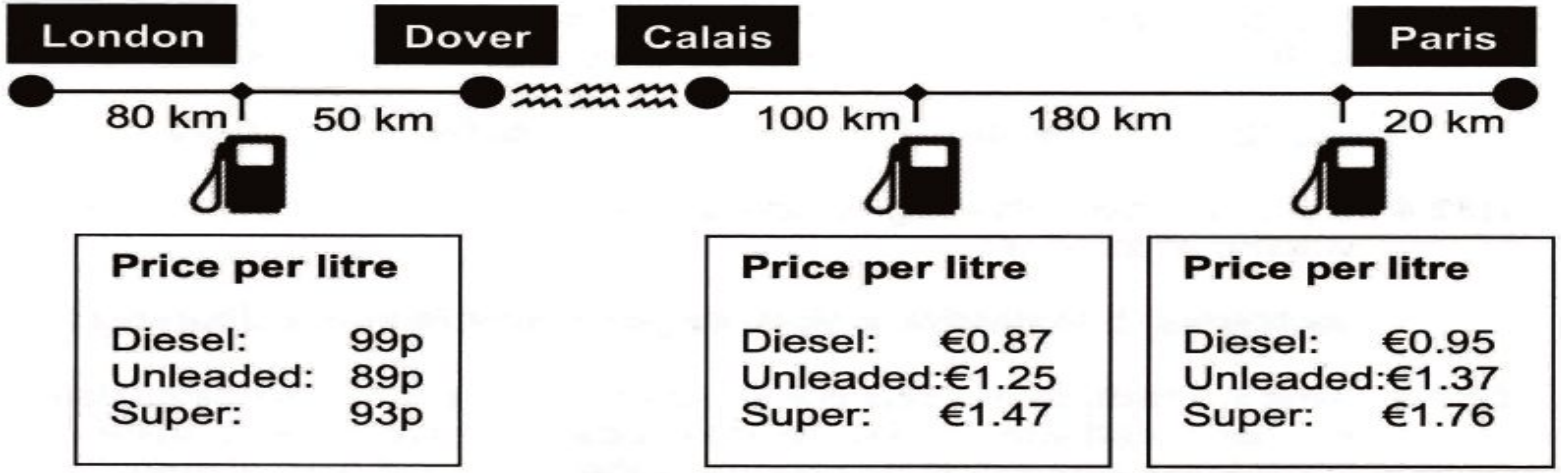
- 2 pitchers of Velocity
- 1 pitcher of Long Island

What volume of gin is required to make these?

a. 1.15 litres **b.** 1.3 litres **c.** 1.5 litres **d.** 2.3 litres **e.** 4.1 litres

Entente Cordiale(Q14 to Q18)

A courier needs to drive from London to Paris and back to deliver a package. The following diagram sets out the route, together with the availability of petrol stations, including prices and distances between each.

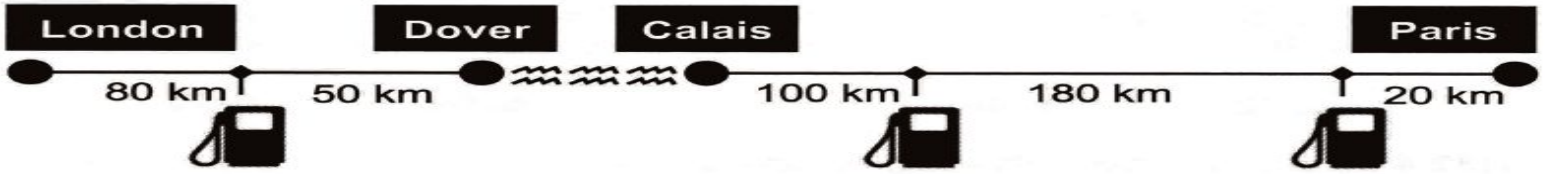


Between Calais and Dover, the car is loaded onto a ferry boat. The cost of a single ferry journey is £75. Including loading and offloading time, the ferry journey takes 2 hours each way.

Exchange rate: £1.00 = €1.20.
Capacity of the car's fuel tank: 45 litres.
The car runs on unleaded petrol.
1 litre of petrol enables the car to drive for 10 km.

Q14)

A courier needs to drive from London to Paris and back to deliver a package. The following diagram sets out the route, together with the availability of petrol stations, including prices and distances between each.



Price per litre	
Diesel:	99p
Unleaded:	89p
Super:	93p

Price per litre	
Diesel:	€0.87
Unleaded:	€1.25
Super:	€1.47

Price per litre	
Diesel:	€0.95
Unleaded:	€1.37
Super:	€1.76

Between Calais and Dover, the car is loaded onto a ferry boat. The cost of a single ferry journey is £75. Including loading and offloading time, the ferry journey takes 2 hours each way.

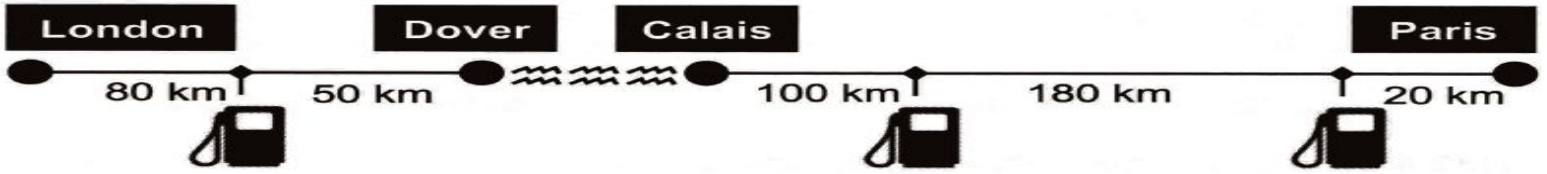
Exchange rate: £1.00 = €1.20.
Capacity of the car's fuel tank: 45 litres.
The car runs on unleaded petrol.
1 litre of petrol enables the car to drive for 10 km.

If the courier drives at an average speed of 110 km/h between London and Dover and at an average speed of 120 km/h between Calais and Paris, how long will it take him to travel from London to Paris, assuming that he does not stop at any petrol station?

a.3h 41 min **b.**3h 49min **c.**4h 41 min **d.**5h 41min **e.**5h 49min

Q15)

A courier needs to drive from London to Paris and back to deliver a package. The following diagram sets out the route, together with the availability of petrol stations, including prices and distances between each.



Price per litre	
Diesel:	99p
Unleaded:	89p
Super:	93p

Price per litre	
Diesel:	€0.87
Unleaded:	€1.25
Super:	€1.47

Price per litre	
Diesel:	€0.95
Unleaded:	€1.37
Super:	€1.76

Between Calais and Dover, the car is loaded onto a ferry boat. The cost of a single ferry journey is £75. Including loading and offloading time, the ferry journey takes 2 hours each way.

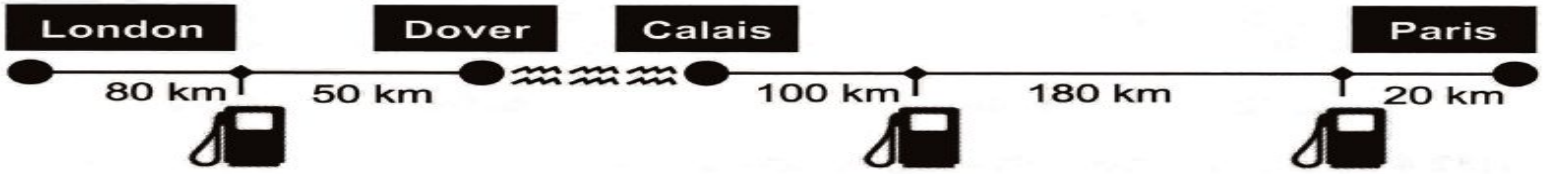
Exchange rate: £1.00 = €1.20.
Capacity of the car's fuel tank: 45 litres.
The car runs on unleaded petrol.
1 litre of petrol enables the car to drive for 10 km.

The driver sets out from London with a full tank of fuel. He heads towards Paris with the intention of turning back as soon as he has delivered the package. He forgets to check his fuel gauge and runs out of petrol. At what distance from Paris will he stop?

a. 10 km **b.** 20 km **c.** 30 km **d.** 50 km **e.** 70 km

Q16)

A courier needs to drive from London to Paris and back to deliver a package. The following diagram sets out the route, together with the availability of petrol stations, including prices and distances between each.



Price per litre	
Diesel:	99p
Unleaded:	89p
Super:	93p

Price per litre	
Diesel:	€0.87
Unleaded:	€1.25
Super:	€1.47

Price per litre	
Diesel:	€0.95
Unleaded:	€1.37
Super:	€1.76

Between Calais and Dover, the car is loaded onto a ferry boat. The cost of a single ferry journey is £75. Including loading and offloading time, the ferry journey takes 2 hours each way.

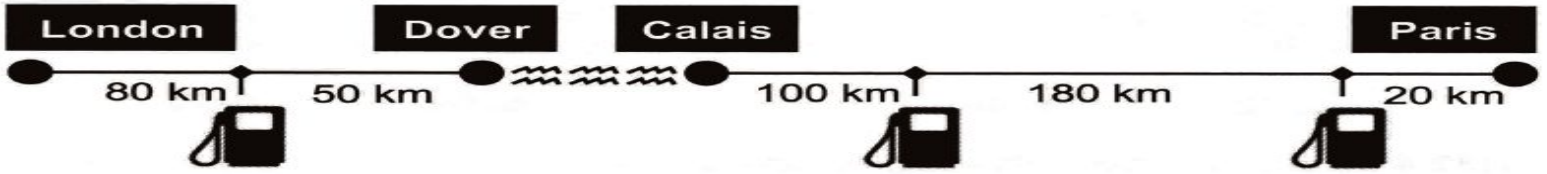
Exchange rate: £1.00 = €1.20.
Capacity of the car's fuel tank: 45 litres.
The car runs on unleaded petrol.
1 litre of petrol enables the car to drive for 10 km.

The courier sets out from London with 20 litres of fuel in his tank. He fills his tank to full capacity every time he meets a petrol station and keeps the receipts to give to his boss. How much will his fuel receipts total for the single journey London to Paris?

a. £43.29 **b.** £65.54 **c.** £72.78 **d.** £75.36 **e.** £81.76

Q17)

A courier needs to drive from London to Paris and back to deliver a package. The following diagram sets out the route, together with the availability of petrol stations, including prices and distances between each.



Price per litre	
Diesel:	99p
Unleaded:	89p
Super:	93p

Price per litre	
Diesel:	€0.87
Unleaded:	€1.25
Super:	€1.47

Price per litre	
Diesel:	€0.95
Unleaded:	€1.37
Super:	€1.76

Between Calais and Dover, the car is loaded onto a ferry boat. The cost of a single ferry journey is £75. Including loading and offloading time, the ferry journey takes 2 hours each way.

Exchange rate: £1.00 = €1.20.
Capacity of the car's fuel tank: 45 litres.
The car runs on unleaded petrol.
1 litre of petrol enables the car to drive for 10 km.

The courier's car breaks down in Paris and he is offered a choice between two replacement cars for his return journey to London:

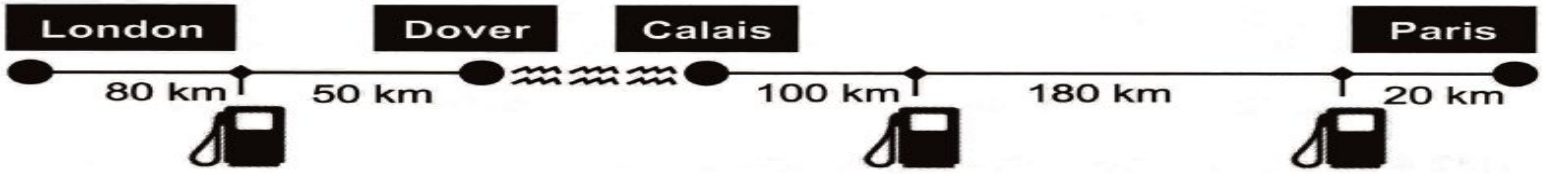
- Car A runs on diesel, using 1 litre of diesel per 15 km.
- Car B runs on super, using 1 litre of super per 10 km.

The driver leaves on a full tank (45 litres for both cars) and decides to refuel to full capacity at every petrol station. What is the difference in fuel spend between the two options?

a. €22.05 **b.** €23.13 **c.** €24.21 **d.** €25.03 **e.** €26.05

Q18)

A courier needs to drive from London to Paris and back to deliver a package. The following diagram sets out the route, together with the availability of petrol stations, including prices and distances between each.



Price per litre	
Diesel:	99p
Unleaded:	89p
Super:	93p

Price per litre	
Diesel:	€0.87
Unleaded:	€1.25
Super:	€1.47

Price per litre	
Diesel:	€0.95
Unleaded:	€1.37
Super:	€1.76

Between Calais and Dover, the car is loaded onto a ferry boat. The cost of a single ferry journey is £75. Including loading and offloading time, the ferry journey takes 2 hours each way.

Exchange rate: £1.00 = €1.20.
Capacity of the car's fuel tank: 45 litres.
The car runs on unleaded petrol.
1 litre of petrol enables the car to drive for 10 km.

The courier sets out from London in his usual car on a full tank of unleaded. On the way he stops at a petrol station to fill his fuel tank completely. The refuelling costs him €28.75 (or Pound Sterling equivalent). How many litres of unleaded did he buy?

a. 8 litres **b.** 23 litres **c.** 25 litres **d.** 27 litres **e.** 41 litres

It Rings a Bell(Q19 to Q22)

The Green Mobile Phone Company offers the following tariffs:

Tariff Number	Monthly Fee	Talk minutes included	SMS texts included
1	£15	0	Unlimited
2	£20	200	Unlimited
3	£35	600	Unlimited
4	£35	700	250
5	£45	900	Unlimited
6	£55	1500	Unlimited

Talk minutes included in the tariffs include calls to all mobile phones on the Green network but not calls to mobile phones on other networks. Texts included in the tariffs include texts sent to any mobile phone on any network. Calls and texts made outside of the tariff are charged as follows:

- Calls to Green mobile numbers: 15p per minute
- Calls to other mobiles: 40p per minute
- Additional text messages (any network): 10p per text

The H_2O Mobile Phone Company offers the following tariffs:

Tariff Number	Monthly Fee	Talk minutes Included	SMS texts included
A	£15	100	100
B	£20	200	200
C	£25	300	300
D	£30	700	400
E	£35	800	500
F	£40	1000	500

Talk minutes included in the tariffs include calls to mobiles on all networks (and not just H_2O). Texts can be sent to any mobile phone on any network. Calls and texts made outside of the tariff are charged as follows:

- Mobile numbers: 30p per minute
- Additional text messages: 12p per text

Q19)

The Green Mobile Phone Company offers the following tariffs:

Tariff Number	Monthly Fee	Talk minutes included	SMS texts included
1	£15	0	Unlimited
2	£20	200	Unlimited
3	£35	600	Unlimited
4	£35	700	250
5	£45	900	Unlimited
6	£55	1500	Unlimited

Talk minutes included in the tariffs include calls to all mobile phones on the Green network but not calls to mobile phones on other networks. Texts included in the tariffs include texts sent to any mobile phone on any network. Calls and texts made outside of the tariff are charged as follows:

- Calls to Green mobile numbers: 15p per minute
- Calls to other mobiles: 40p per minute
- Additional text messages (any network): 10p per text

The H_2O Mobile Phone Company offers the following tariffs:

Tariff Number	Monthly Fee	Talk minutes Included	SMS texts included
A	£15	100	100
B	£20	200	200
C	£25	300	300
D	£30	700	400
E	£35	800	500
F	£40	1000	500

Talk minutes included in the tariffs include calls to mobiles on all networks (and not just H_2O). Texts can be sent to any mobile phone on any network. Calls and texts made outside of the tariff are charged as follows:

- Mobile numbers: 30p per minute
- Additional text messages: 12p per text

A Green Mobile Phone Company customer has opted for Tariff 4. In January, he had the following consumption:

- 300 talk minutes to contacts on the Green Telephone network
- 300 minutes to contacts who are on the H_2O network
- 100 texts to contacts on the Green Telephone network
- 150 texts to contacts who are on the H_2O network

How much was his telephone bill?

a. £35 **b.** £75 **c.** £125 **d.** £155 **e.** £183

Q20)

The Green Mobile Phone Company offers the following tariffs:

Tariff Number	Monthly Fee	Talk minutes included	SMS texts included
1	£15	0	Unlimited
2	£20	200	Unlimited
3	£35	600	Unlimited
4	£35	700	250
5	£45	900	Unlimited
6	£55	1500	Unlimited

Talk minutes included in the tariffs include calls to all mobile phones on the Green network but not calls to mobile phones on other networks. Texts included in the tariffs include texts sent to any mobile phone on any network. Calls and texts made outside of the tariff are charged as follows:

- Calls to Green mobile numbers: 15p per minute
- Calls to other mobiles: 40p per minute
- Additional text messages (any network): 10p per text

The H_2O Mobile Phone Company offers the following tariffs:

Tariff Number	Monthly Fee	Talk minutes Included	SMS texts included
A	£15	100	100
B	£20	200	200
C	£25	300	300
D	£30	700	400
E	£35	800	500
F	£40	1000	500

Talk minutes included in the tariffs include calls to mobiles on all networks (and not just H_2O). Texts can be sent to any mobile phone on any network. Calls and texts made outside of the tariff are charged as follows:

- Mobile numbers: 30p per minute
- Additional text messages: 12p per text

A potential mobile customer is wondering which company and tariff he should be using. All his friends and family are using the Green Mobile Phone Company and he reckons he will be spending 10.5 hours on the phone to them every month and text them 450 times per month. Which tariff would ensure the cheapest bill?

a. Tariff 3 **b.** Tariff 4 **c.** Tariff C **d.** Tariff D **e.** Tariff E

Q21)

The Green Mobile Phone Company offers the following tariffs:

Tariff Number	Monthly Fee	Talk minutes included	SMS texts included
1	£15	0	Unlimited
2	£20	200	Unlimited
3	£35	600	Unlimited
4	£35	700	250
5	£45	900	Unlimited
6	£55	1500	Unlimited

Talk minutes included in the tariffs include calls to all mobile phones on the Green network but not calls to mobile phones on other networks. Texts included in the tariffs include texts sent to any mobile phone on any network. Calls and texts made outside of the tariff are charged as follows:

- Calls to Green mobile numbers: 15p per minute
- Calls to other mobiles: 40p per minute
- Additional text messages (any network): 10p per text

The H_2O Mobile Phone Company offers the following tariffs:

Tariff Number	Monthly Fee	Talk minutes Included	SMS texts included
A	£15	100	100
B	£20	200	200
C	£25	300	300
D	£30	700	400
E	£35	800	500
F	£40	1000	500

Talk minutes included in the tariffs include calls to mobiles on all networks (and not just H_2O). Texts can be sent to any mobile phone on any network. Calls and texts made outside of the tariff are charged as follows:

- Mobile numbers: 30p per minute
- Additional text messages: 12p per text

A customer on Tariff E is thinking of moving to Tariff F. What is the minimum number of minutes that he would need to talk on the phone each month in order to make the move worthwhile?

a. 716 min **b.** 717 min **c.** 800 min **d.** 816 min **e.** 817 min

Q22)

The Green Mobile Phone Company offers the following tariffs:

Tariff Number	Monthly Fee	Talk minutes included	SMS texts included
1	£15	0	Unlimited
2	£20	200	Unlimited
3	£35	600	Unlimited
4	£35	700	250
5	£45	900	Unlimited
6	£55	1500	Unlimited

Talk minutes included in the tariffs include calls to all mobile phones on the Green network but not calls to mobile phones on other networks. Texts included in the tariffs include texts sent to any mobile phone on any network. Calls and texts made outside of the tariff are charged as follows:

- Calls to Green mobile numbers: 15p per minute
- Calls to other mobiles: 40p per minute
- Additional text messages (any network): 10p per text

The H_2O Mobile Phone Company offers the following tariffs:

Tariff Number	Monthly Fee	Talk minutes Included	SMS texts included
A	£15	100	100
B	£20	200	200
C	£25	300	300
D	£30	700	400
E	£35	800	500
F	£40	1000	500

Talk minutes included in the tariffs include calls to mobiles on all networks (and not just H_2O). Texts can be sent to any mobile phone on any network. Calls and texts made outside of the tariff are charged as follows:

- Mobile numbers: 30p per minute
- Additional text messages: 12p per text

A customer on Tariff 6 has five friends to whom he has spoken as follows in one month (he spoke to no one else). His bill for the month is £450. The bill shows that he used the following minutes:

Jane	Green	220 minutes
John	H_2O	Illegible
Kelly	Green	280 minutes
Mark	Green	1000 minutes
Roberta	Green	500 minutes

How many minutes did he speak to John for that month?

a. 633 **b.** 800 **c.** 937 **d.** 1,275 **e.** 2,133

Q.R 5

Within Shopping Distance	
Q. no.	**Answer**
1	d
2	e
3	a
4	e
5	a
6	c
7	e

Shaken, not Stirred	
Q. no.	**Answer**
8	d
9	b
10	d
11	c
12	d
13	b

Entente Cordiale	
Q. no.	**Answer**
14	d
15	b
16	b
17	b
18	b

It Rings a Bell	
Q. no.	**Answer**
19	d
20	e
21	e
22	b

Home Assignment

1250 UCAT Practice Question Book: Quantitative Reasoning Practice	
Set 29	Advertising Rates
Set 30	A Matter of Time
Set 34	Parking
Set 36	Voting Turnout
	Official UCAT Questions from https://www.ucat.ac.uk/prepare/practice-tests/

Thank you