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# The organizing effect of a simulation game experienced in advance of reception learning of economics

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## MONOPOLY MARKET SUPPLY AND TOTAL CONSUMER EXPENDITURE

OBJECTIVES

After reading this lesson carefully the student should be able to:

1 distinguish between the meanings of the terms *monopoly*, *duopoly*, *oligopoly* and *monopsony*.

2 give examples of various types of *monopoly*.

3 discuss monopoly control of output and price.

4 calculate the gross revenue for a given price and quantity, as represented by a demand curve.

MONOPOLY

1 Definitions Monopoly (monos = single, polien = to sell) exists where there is single control in the market.

Note how monopoly deffers from the following kinds of market:

(a) Duopoly. This exists where there are only two producers in a market.

(b) Oligopoly. (oligoi = few, polien = to sell) This exists where there are very few producers of a commodity.

(c) Monopsony. This exists where there is only one buyer.

2 Monopoly situations Monopolies may come about from natural or artificial causes.

(a) Natural monopolies

(i) Because of limited and localised supplies. As for example gem diamonds in southern Africa, or genuine Picasso originals.

(ii) Industries with decreasing cost per unit of output. The low production costs of an established producer create a barrier of entry to newcomers with high initial costs wishing to enter the market at competitive prices.

(b) Artificial monopolies

(i) Service monopolies are able to exercise monopoly powers over the supply of some types of labour. For example, trade unions and organized professions such as law and medicine.

(ii) Temporary monopolies arise where for example, supplies are "cornered" for some time, as in the case of the retail liquor trade in South Africa. sections of

(iii) Controlled monopolies are maintained when the state nationalises whole industries; and for social reasons as in the case of water and electricity supplies.

(iv) Legal monopolies are created by trade marks, patent rights and copyrights.

(v) Monopoly organizations formed to eliminate competition. The cartel and the pool are among the most important types. In a cartel, OPEC for example, the output of member firms is controlled and restricted so as to keep up prices. Members keep their identity, but output is distributed through a central sales organisation which fixes quotas and selling prices. The pool is a combination, usually loose, of firms combining for marketing purposes, so as to keep up prices. The commercial banks in South Africa have recently disbanded a similar arrangement which was called RCCC.

3 Monopoly output and price The monopolist may fix either the supply of quantity, or the price. Because of the consumers' influence of demand, the monopolist can not fix both price and quantity. Note that:

If the monopolist sets too high a price, raising the cost barrier to entry, this may stimulate the entry of new producers, or or encourage the production of substitutes. It may also lead to intervention by the state in the market, as for example rent control.

4 Gross revenue

To work out how much income will be received (i.e. revenue) when a certain quantity of goods, say 100 WITS RAG T shirts, is sold at a certain price, say R5,50 per shirt, the price is multiplied by the quantity sold. Thus R5,50 x 100 = R550,00.

Figure 1 shows that the multiplication of price by quantity to give the gross revenue from a market, can be represented by a rectangle on a graph of the demand curve. The simple arithmetical rule for calculating the area of a rectangle is to multiply one dimension by the other. In the same way, gross revenue is calculated by multiplying the price dimension by the quantity dimension. In this way the graph gives us a model so that we can see on paper what we cannot see happening in the actual market place. The demand curve indicates the precise quantity demanded and the price to which that quantity corresponds.

In figure 1 the rectangle ABCO represents the gross revenue from 100 T shirts at a price of R5,50.

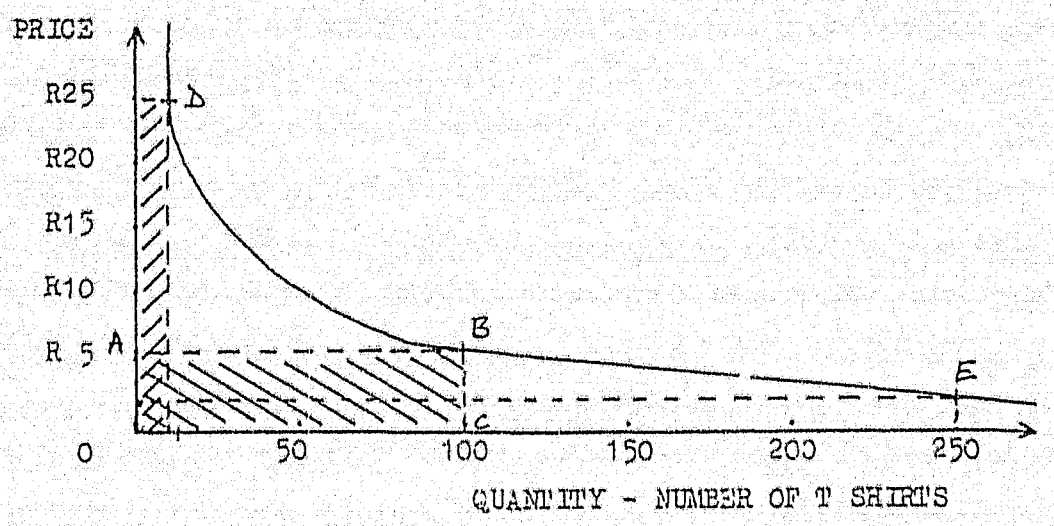



Figure 1 - Gross revenue from the sale of T shirts.

Calculate the gross revenue at the rather exhorbitant price of R25,00 a T shirt.

If the price were decreased to R2,00 a T shirt, what revenue would be received for Wits Rag?

At which point on the demand curve, D,E or E, is gross revenue the greatest?

APPENDIX H

OUTLINE OF THE TOPIC: GRAPHIC REPRESENTATION OF DEMAND ELASTICITY

1 Preparatory reading on the concepts:

1.1 MARKET DEMAND SCHEDULE

1.2 MARKET DEMAND CURVE

1.3 MONOPOLY MARKET SUPPLY

1.4 TOTAL CONSUMER EXPENDITURE

2 Simulation Game - Economics of Monopoly Management.

3 Expository-reception learning: lecture notes:

THE GRAPHIC REPRESENTATION OF ELASTICITIES OF DEMAND

3.1 THE CONCEPT OF ELASTICITY

3.2 DEFINITION OF ELASTIC DEMAND

3.3 CALCULATION OF THE COEFFICIENT OF PRICE ELASTICITY OF DEMAND

3.4 DEGREES OF ELASTICITY OF DEMAND

| PERFECTLY INELASTIC DEMAND | RELATIVELY INELASTIC DEMAND | UNITARY ELASTICITY OF DEMAND | RELATIVELY ELASTIC DEMAND | INFINITELY ELASTIC DEMAND |
|---|---|---|---|---|
| $\eta = 0$ | $0 < \eta < 1$ | $\eta = 1$ | $1 < \eta < \infty$ | $\eta = \infty$ |

3.5 EXAMPLES OF MARKET CONDITIONS OF ELASTICITY

3.6 GRAPHIC REPRESENTATIONS OF ELASTICITIES

| ZERO AND RELATIVELY INELASTIC DEMAND CURVES | DEMAND CURVE WITH UNITARY ELASTICITY | RELATIVELY AND INFINITELY ELASTIC DEMAND CURVES |
|---|---|---|

3.7 THE EFFECT OF PRICE ELASTICITY OF DEMAND ON TOTAL CONSUMER EXPENDITURE, THAT IS, THE GROSS REVENUE OF THE SUPPLIERS

THE IMPORTANCE OF ELASTICITY OF DEMAND TO THE ENTREPRENEUR

## MARKET DEMAND SCHEDULES AND CURVES

OBJECTIVES

After reading this lesson carefully the student should be able to:

1 distinguish between a market demand schedule and a market demand curve;

2 interpret a graph representing quantities demanded at given prices;

3 describe two exceptions to the normal demand curve.

## MARKET DEMAND SCHEDULES AND CURVES

1 The movement of demand Other things being equal, a consumer will demand more goods at a lower price than at a higher price. This movement in quantities demanded can be illustrated in two ways:

(a) either in the form of a demand schedule (as in table I), which lists demand at various prices; or

(b) in the form of a demand curve (as in figure 1), which is a graphical representation of the relationship between two variables, price and demand.

Note: The construction of a simple graph is explained in paragraph 3 below.

2 A market demand schedule Table I sets out an imaginary demand schedule, i.e. quantities of a good demanded per unit of time at given prices.

Table I - DEMAND SCHEDULE

| Price per unit | Number of units demanded per week |
|---|---|
| 1c | 4 000 |
| 2c | 3 000 |
| 3c | 2 200 |
| 4c | 1 700 |
| 5c | 1 300 |

The following points should be noted:

a. The schedule is made up of all the individual demand schedules of the different consumers of the same product in the market. i.e. by adding together the amounts demanded by separate individuals who have the ability and willingness to purchase at particular prices.

b. The schedule indicates that, as price rises, so less of the commodity will be demanded.

3 Market demand curve It is possible to represent the information in table 1 in the form of a graph, as in figure 1.

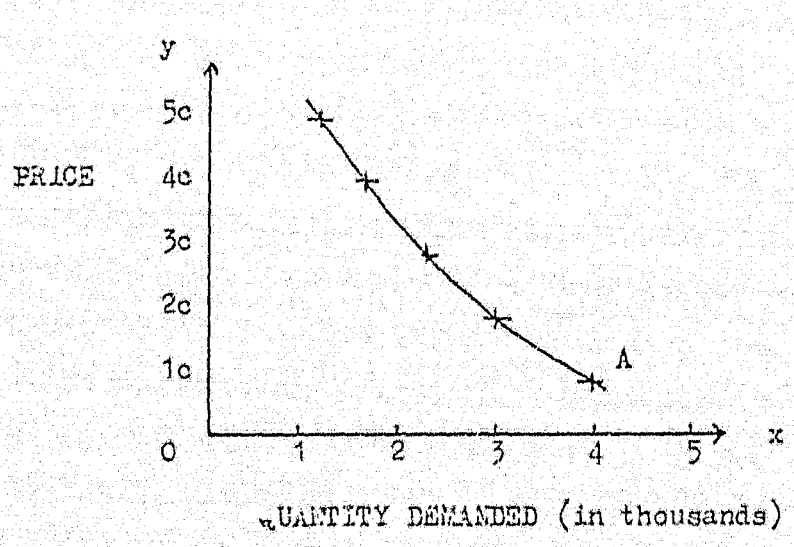



Figure 1 - A usual demand curve

4 Construction of the graph in figure 1.

The construction of the graph is as set out overleaf in paragraphs (a) to (e).

(a) Two axes (x and y) are drawn at right-angles to each other. The horizontal axis known as the x axis; the vertical axis is the y axis.

(b) Distance along the x axis from the point at which the axes intersect (point 0) represents the total <u>quantity</u> demanded per week ("1" indicates 1 000 and "2" indicates 2 000). Distance up the y axis represents <u>price</u>.

(c) To plot a point indicating "price per unit = 1c, demand = 4 000", we move <u>up</u> the y axis to the point at 1c, then we move from that point on a path parallel to the x axis until we reach the point A, which is directly above 4 on the x axis, indicating 4 000.

(d) This is repeated for each price and corresponding quantity demanded.

(e) The points are joined together to form a curve. (Note that where the points are joined and a straight line results, it is nevertheless referred to as a <u>curve</u>)

5 <u>Comments on figure 1</u>. Consider the following points in relation to figure 1:

(a) The curve represents the total quantities which consumers will demand at a given price per unit of time.

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(b) Distance along the x axis from the point at which the axes intersect (point 0) represents the total quantity demanded per week ("1" indicates 1 000 and "2" indicates 2 000). Distance up the y axis represents price.

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(d) This is repeated for each price and corresponding quantity demanded.

(e) The points are joined together to form a curve. (Note that where the points are joined and a straight line results, it is nevertheless referred to as a curve)

5 Comments on figure 1. Consider the following points in relation to figure 1:

(a) The curve represents the total quantities which consumers will demand at a given price per unit of time.

(b) The curve falls to the right (the usual path of a demand curve).

(c) The curve in figure 1 shows clearly that the quantity demanded increases with a fall in price.

(d) The presentation of data on the graph is based on the 'ceteris paribus' assumption that 'other things remain equal'.

6 Unusual demand curves. The usual demand curve slopes downward from left to right, indicating that, as price falls, so the quantity demanded will increase. There are, however, a few exceptional cases in which a fall in price may result in a fall in the quantity demanded, and a rise in price may result in an increase in the quantity demanded. In such cases the demand curve - or at least part of it - would slope, not downwards to the right, but upwards from left to right over part of its length. Two such cases represented in figures 2 and 3, are "Giffen's paradox" and "ostentatious buying".

EXCEPTIONS TO THE USUAL DEMAND CURVE

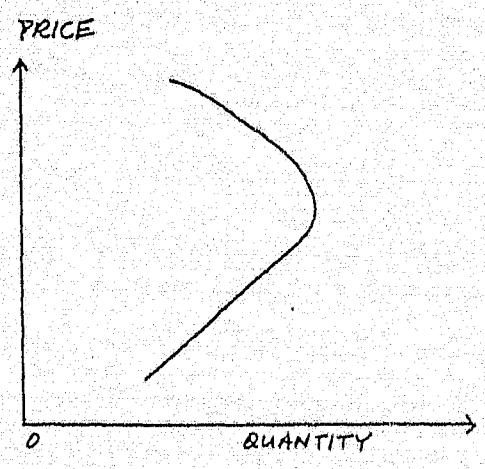



Figure 1

Demand for 'Giffen goods'.

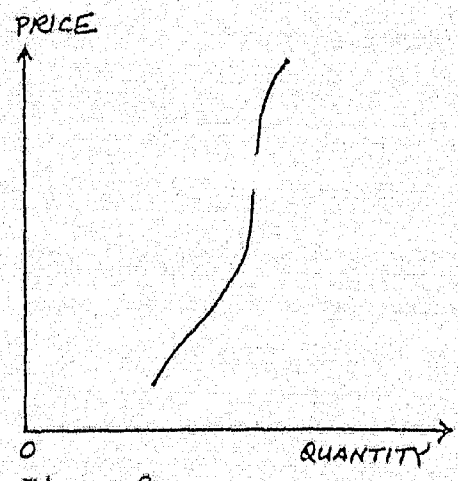



Figure 2

Demand for 'ostentatious' goods.

(a) <u>The so-called "Giffen goods"</u>.

Sir Robert Giffen (1837 - 1910) was a statistician and an economist. He noticed that when the price of bread fell, consumers, particularly the poor, were able to spend <u>less</u> - not more - of their money on bread. Relatively cheaper bread meant that they had money left for dearer goods like meat and fruit. When the price of bread increased, these consumers spent <u>more</u> money on bread, being unable to afford the 'superior', more expensive goods at all. "Giffen's paradox" refers, therefore, to the rare exceptions of those essential and relatively cheap goods, the demand for which may increase in the case of those with low incomes, following a small rise in price. Consider the demand for maize meal in southern Africa.

(b) <u>"Ostentatious buying"</u>.

In some cases, consider gem diamonds, caviar and de luxe models of cars; goods are bought at a high price in order that their possession might impress. Total demand may decrease if price falls and renders the goods no longer expensive. If this happened, their purchase and possession would cease to mark the possessor in some way. Ostentatious demand would then decline as the price declines.

## J. D. Bingham & Associates

1137 Boylston Street
Boston, Massachusetts 02115
617-263-3525

To: The Homeowners' Association

Re: Effect of the cost of phone service on demand

Members of the J. D. Bingham & Associates Company interviewed every potential subscriber to the phone service on Trebedies Island and analyzed the incomes and assets of a selected sample. The results of our study are presented in the adjacent chart. It is our belief that the stability and character of the island population make this projection very reliable.

| Monthly Rate | Probable Number of Subscribers |
|---|---|
| PRICE | X QUANTITY |
| = TOTAL REVENUE FROM HOUSEOWNERS. | |
| REFER TO THE ATTACHED GRAPH AND DEMAND SHEDULE. | |

## Pierce Investment Company*

Two Hundred Seventh Ave.
Groton Island 1005
212-799-5600

Rates of Return for Various Types of Investments:

| | | |
|---|---|---|
| Bonds | Bonds are one of the safest forms of investments. Present rate of return being offered averages 8%. | |
| Savings and Loan | Long term deposits of $1,000 or more: | -six years = 7.75%<br>-four years = 7.5% |
| Banks | Long term deposits of $1,000 or more: | -six years = 7.5%<br>-four years = 7.25%<br>Regular savings accounts = 5% |
| Preferred Stock | Guaranteed rate of return. Amount offered tends to fluctuate with interest rates. During the last ten years rates have ranged from 6% to 9.75% averaging 8%. | |
| Common Stock | Rate of return depends entirely on the stock. Average return on utilities in U.S.A. for past ten years is 8.7%; Average return for telephone companies in the U.S.A. during the past decade equals 7.5%. | |
| Real Estate | Depends entirely on the situation. High to low risk with high to low rates of return. | |

*These figures are for illustrative purposes and do not necessarily reflect current rates.

## Bid Form - Commonwealth Of Trebedies

Department of Communication
1041 Capitol Plaza

Pursuant to section 1039 of the island communications code, bids are hereby sought for establishing a telephone system on Trebedies Island. All corporations submitting a bid must be formed solely for the purpose of providing telephone service to the residents and businesses on Trebedies Island and meet the qualifications contained in Section 1039.

A. What rate of return do you propose for the investors? _____

B. What do you propose as the rate for the monthly telephone service (101 phones) for the Baranga Lagoon Business District? _____

C. How much revenue will be generated by this rate (101 X B =)? _____

D. What do you propose as the monthly rate for the telephone service for the island homes? _____

E. How many islanders will likely sign up for the phone service at this rate? Use the Bingham & Associates report to determine this number. _____

F. How much revenue will be generated by this rate (DXE)? _____

G. What is the total amount of revenue generated (F+C)? _____

H. What rate of return will such a price generate for the investors? (A should equal H). _____

To determine H, find the row on the Monthly Revenue Chart with the total number of phones you will install, follow it along until you find the figure in any "A" column which comes closest to G. At the top of that column is the percentage rate you can offer the investors.

Do not answer below this line. Do not discuss your bid with competing companies.

| | Winning Bid | |
|---|---|---|
| | Yes | No |
| Trebedies Island Homeowners' Association | _____ | _____ |
| Baranga Lagoon Business Association | _____ | _____ |
| Investor group | _____ | _____ |

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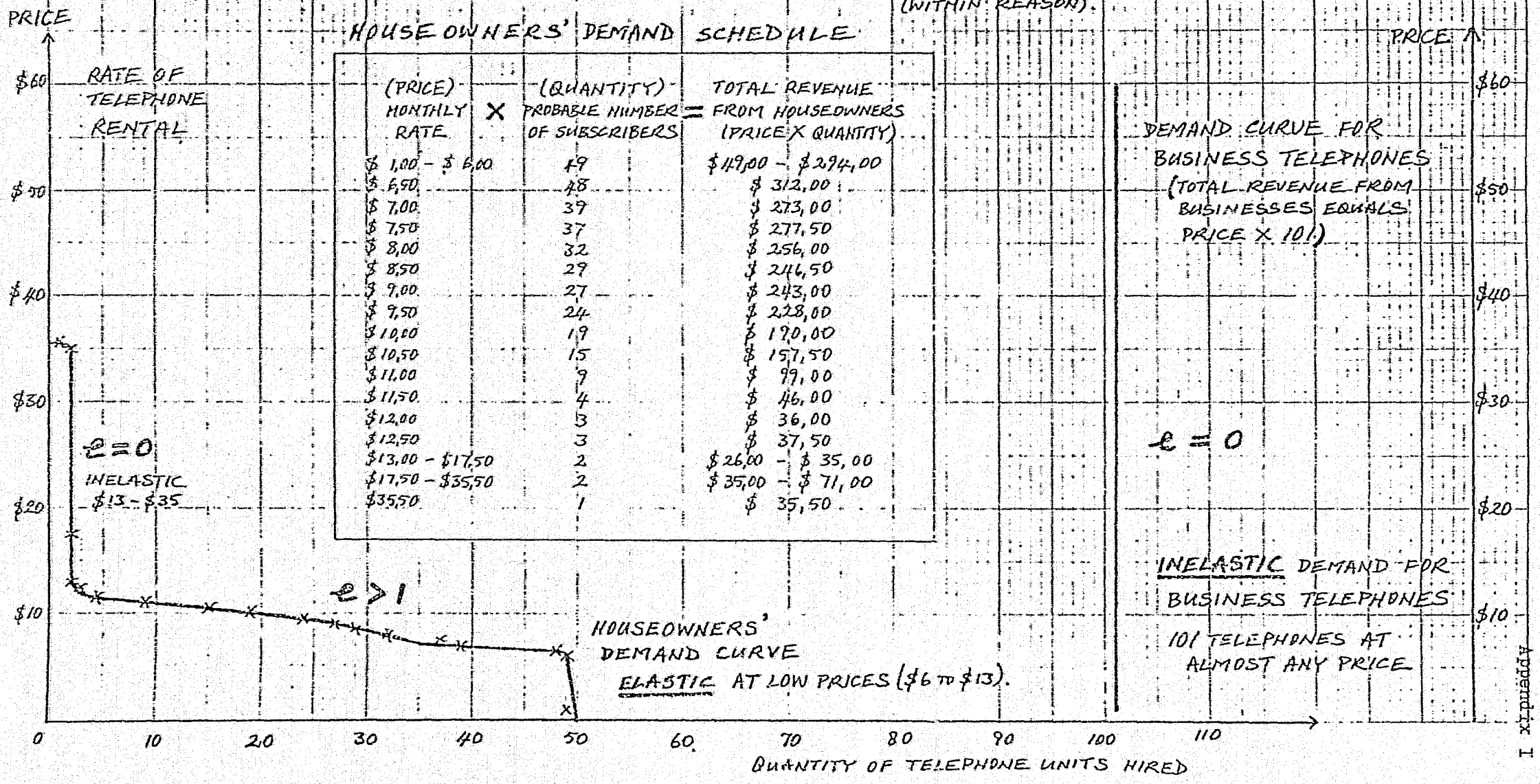
# GRAPH SHOWING TWO DEMAND CURVES WHICH REPRESENT THE DEMAND FOR A TELEPHONE SERVICE BY THE HOUSEOWNERS AND THE BUSINESSES ON TREBIDIES ISLAND.

**A VERY IMPORTANT NOTE**

NOTE HOW RESPONSIVE THE QUANTITY DEMANDED BY THE HOUSEOWNERS, AT LOW PRICES, IS TO CHANGES IN PRICE — A VERY SMALL CHANGE ON THE PRICE AXIS CORRESPONDS TO A LARGE STRETCH ALONG THE QUANTITY AXIS FOR HOUSEHOLDERS. COMPARE THIS WITH THE QUANTITY DEMANDED BY THE BUSINESSES — THEY WILL TAKE 101 TELEPHONES (NO MORE, NO LESS) AT ALMOST ANY PRICE. THE BUSINESSES' DEMAND IS NOT AT ALL RESPONSIVE TO PRICE CHANGES (WITHIN REASON).

## HOUSEOWNERS' DEMAND SCHEDULE

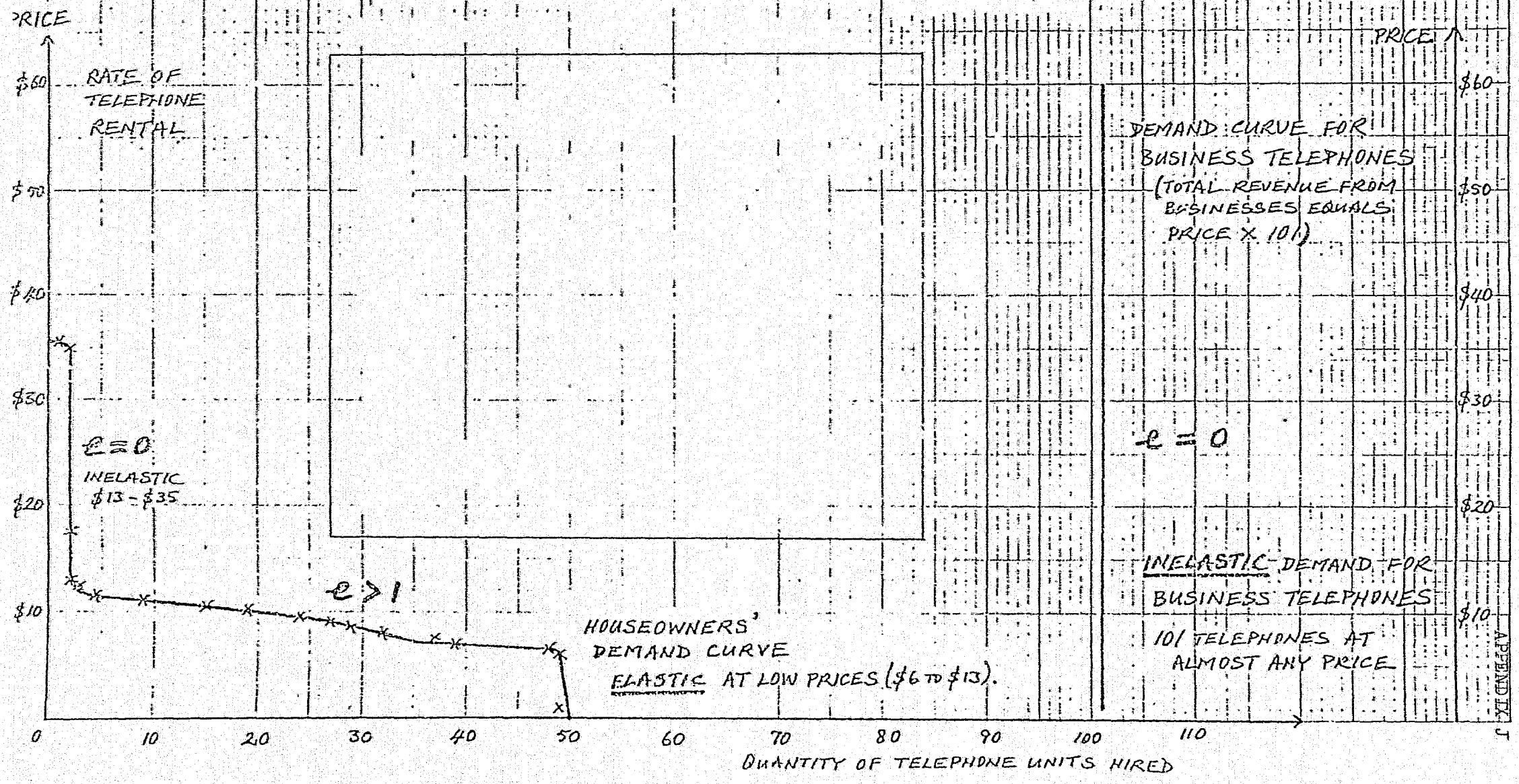
| RATE OF TELEPHONE RENTAL (PRICE) MONTHLY RATE | × (QUANTITY) PROBABLE NUMBER OF SUBSCRIBERS | = TOTAL REVENUE FROM HOUSEOWNERS (PRICE × QUANTITY) |
|---|---|---|
| $ 1,00 – $ 6,00 | 49 | $ 49,00 – $ 294,00 |
| $ 6,50 | 48 | $ 312,00 |
| $ 7,00 | 39 | $ 273,00 |
| $ 7,50 | 37 | $ 277,50 |
| $ 8,00 | 32 | $ 256,00 |
| $ 8,50 | 29 | $ 246,50 |
| $ 9,00 | 27 | $ 243,00 |
| $ 9,50 | 24 | $ 228,00 |
| $ 10,00 | 19 | $ 190,00 |
| $ 10,50 | 15 | $ 157,50 |
| $ 11,00 | 9 | $ 99,00 |
| $ 11,50 | 4 | $ 46,00 |
| $ 12,00 | 3 | $ 36,00 |
| $ 12,50 | 3 | $ 37,50 |
| $ 13,00 – $ 17,50 | 2 | $ 26,00 – $ 35,00 |
| $ 17,50 – $ 35,50 | 2 | $ 35,00 – $ 71,00 |
| $ 35,50 | 1 | $ 35,50 |




Appendix I

# GRAPH SHOWING TWO DEMAND CURVES WHICH REPRESENT THE DEMAND FOR A TELEPHONE SERVICE BY THE HOUSEOWNERS AND THE BUSINESSES ON TREBIDIES ISLAND.

NOTE HOW RESPONSIVE THE QUANTITY DEMANDED BY THE HOUSEOWNERS, AT LOW PRICES, IS TO CHANGES IN PRICE — A VERY SMALL CHANGE ON THE PRICE AXIS CORRESPONDS TO A LARGE STRETCH ALONG THE QUANTITY AXIS FOR HOUSEHOLDERS.



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| Monthly Rate (PRICE) | Probable Number of Subscribers (QUANTITY) |
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| $ 9.50 | 24 |
| $10.00 | 19 |
| $10.50 | 15 |
| $11.00 | 9 |
| $11.50 | 4 |
| $12.00 | 3 |
| $12.50 | 3 |
| $13.00-$17.50 | 2 |
| $17.50-$35.50 | 2 |
| $35.50 | 1 |

PRICE X QUANTITY = TOTAL REVENUE FROM HOUSE-OWNERS.

REFER TO THE ATTACHED SCHEDULE FOR TOTAL REVENUE.

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| | Winning Bid | |
|---|---|---|
| | Yes | No |
| Trebedies Island Homeowners' Association | _____ | _____ |
| Baranga Lagoon Business Association | _____ | _____ |
| Investor group | _____ | _____ |

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APPENDIX K

## SHEDULE OF HOUSE OWNERS' DEMAND FOR A TELEPHONE SERVICE ON TREBEDIES ISLAND AND THE TOTAL REVENUE FROM HOUSEOWNERS

### HOUSEOWNERS' DEMAND SCHEDULE

| THE PRICE IS THE RATE OF TELEPHONE RENTAL | (PRICE) MONTHLY RATE | × | (QUANTITY) PROBABLE NUMBER OF SUBSCRIBERS | = | TOTAL REVENUE FROM HOUSEOWNERS (PRICE × QUANTITY) |
|---|---|---|---|---|---|
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DEMAND FOR BUSINESS TELEPHONES IS 101

TOTAL REVENUE FROM BUSINESSES EQUALS PRICE × 101

APPENDIX K

# Monthly Revenue Requirements at Various R es of Return

*COLUMN A: Equals the total amount of revenue required per month to pay investors a dividend on their original investment at the indicated rate of return and pay the monthly expenses.

COLUMN B: Equals the *average* per month per unit charge required to generate the necessary revenue to pay operating expenses and pay investors a return at the indicated level of interest (column A).

| Number of Telephones | 7% | | 7.5% | | 8% | | 8.5% | | 9% | | 9.5% | | 10% | | 10.5% | | 11% | | 11.5% | | 12% | | 12.5% | | 13% | | 13.5% | | 14% | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B | A | B |
| BUSINESS TELEPHONES | 1 | 1011 | 1011 75 | 1076 | 1076 22 | 1141 | 1140 91 | 1205 | 1205 16 | 1270 | 1269 64 | 1334 | 1334 11 | 1399 | 1398 59 | 1463 | 1463 06 | 1528 | 1527 53 | 1592 | 1592 01 | 1656 | 1656 48 | 1721 | 1720 96 | 1785 | 1785 43 | 1850 | 1849 90 | 1914 | 1914 38 |
| | 2 | 1014 | 507 15 | 1073 | 539 41 | 1143 | 571 66 | 1208 | 603 91 | 1273 | 636 18 | 1337 | 668 42 | 1401 | 700 68 | 1466 | 732 93 | 1530 | 765 18 | 1595 | 797 44 | 1659 | 829 69 | 1724 | 861 95 | 1788 | 894 20 | 1853 | 926 46 | 1917 | 958 71 |
| | 3 | 1017 | 338 95 | 1081 | 360 47 | 1146 | 381 98 | 1210 | 403 50 | 1275 | 425 01 | 1340 | 446 53 | 1404 | 468 04 | 1469 | 489 55 | 1533 | 511 07 | 1598 | 532 58 | 1662 | 554 10 | 1727 | 575 61 | 1791 | 597 13 | 1856 | 618 65 | 1920 | 640 16 |
| | 4 | 1019 | 254 85 | 1084 | 271 00 | 1149 | 287 14 | 1213 | 303 29 | 1278 | 319 43 | 1342 | 335 58 | 1407 | 351 72 | 1471 | 367 86 | 1536 | [illegible] 01 | 1601 | 400 16 | 1665 | 416 30 | 1730 | 432 45 | 1794 | 448 59 | 1859 | 464 74 | 1924 | 480 88 |
| | 5 | 1022 | 204 39 | 1087 | 217 32 | 1151 | 230 24 | 1216 | 243 16 | 1280 | 256 09 | 1345 | 269 01 | 1410 | 281 93 | 1474 | 294 85 | [illegible] | 307 78 | 1604 | 320 70 | 1668 | 333 62 | 1733 | 346 55 | 1797 | 359 47 | 1862 | 372 39 | 1927 | 385 32 |
| | 6 | 1025 | 170 75 | 1089 | 181 53 | 1154 | 192 30 | 1218 | 203 07 | 1283 | 213 86 | 1348 | 224 63 | 1412 | 235 41 | 1477 | 246 18 | 1542 | 256 95 | 1606 | 267 73 | 1671 | 278 50 | 1736 | 289 28 | 1800 | 300 06 | 1865 | 310 83 | 1930 | 321 61 |
| | 7 | 1027 | 146 72 | 1092 | 155 97 | 1156 | 165 21 | 1221 | 174 45 | 1286 | 183 69 | 1351 | 192 93 | 1415 | 202 17 | 1480 | 211 41 | 1545 | 220 65 | 1609 | 229 89 | 1674 | 239 13 | 1739 | 248 37 | 1803 | 257 62 | 1868 | 266 86 | 1933 | 276 10 |
| | 8 | 1030 | 128 70 | 1094 | 136 79 | 1159 | 144 88 | 1224 | 152 97 | 1289 | 161 07 | 1353 | 169 16 | 1418 | 177 25 | 1483 | 185 33 | 1547 | 193 42 | 1612 | 201 51 | 1677 | 209 61 | 1742 | 217 70 | 1806 | 225 79 | 1871 | 233 88 | 1936 | 241 96 |
| | 9 | 1032 | 114 69 | 1097 | 121 88 | 1162 | 129 06 | 1226 | 136 27 | 1291 | 143 47 | 1356 | 150 66 | 1421 | 157 86 | 1486 | 165 05 | 1550 | 172 25 | 1615 | 179 44 | 1680 | 186 64 | 1745 | 193 83 | 1809 | 201 03 | 1874 | 208 23 | 1939 | 215.42 |
| | 10 | 1035 | 103 47 | 1100 | 109 95 | 1164 | 116 43 | 1229 | 122 91 | 1294 | 129 39 | 1359 | 135 87 | 1424 | 142 35 | 1488 | 148 83 | 1553 | 155 31 | 1618 | 161 79 | 1683 | 168 27 | 1748 | 174 75 | 1812 | 181 23 | 1877 | 187 71 | 1942 | 194 19 |
| | 20 | 1060 | 53 01 | 1125 | 56 27 | 1191 | 59 53 | 1255 | 62 79 | 1321 | 66 04 | 1386 | 69 30 | 1451 | 72 56 | 1516 | 75 81 | 1582 | 79 07 | 1647 | 82 33 | 1712 | 85 59 | 1777 | 88 85 | 1842 | 92 10 | 1907 | 95 36 | 1972 | 98 62 |
| | 30 | 1086 | 36 19 | 1152 | 38 38 | 1217 | 40 56 | 1282 | 42 75 | 1348 | 44 93 | 1413 | 47 11 | 1479 | 49 30 | 1544 | 51 48 | 1610 | 53 66 | 1675 | 55 84 | 1741 | 58 03 | 1806 | 60 21 | 1872 | 62 40 | 1938 | 64 58 | 2003 | 66.76 |
| | 40 | 1111 | 27 78 | 1177 | 29 43 | 1243 | 31 08 | 1309 | 32 72 | 1395 | 34 37 | 1441 | 36 02 | 1507 | 37 67 | 1572 | 39 31 | 1638 | 40 95 | 1704 | 42 60 | 1770 | 44 25 | 1836 | 45 89 | 1902 | 47 54 | 1968 | 49 19 | 2034 | 50 84 |
| | 50 | 1137 | 22 74 | 1203 | 24 06 | 1269 | 25 39 | 1336 | 26 71 | 1402 | 28 04 | 1468 | 29 36 | 1534 | 30 69 | 1601 | 32 01 | 1667 | 33 13 | 1733 | 34 66 | 1799 | 35 98 | 1865 | 37 30 | 1932 | 38 63 | 1998 | 39 95 | 2064 | 41 28 |
| | 60 | 1162 | 19 37 | 1229 | 20 48 | 1296 | 21 59 | 1362 | 22 70 | 1429 | 23 81 | 1495 | 24 92 | 1562 | 26 03 | 1629 | 27 14 | 1695 | 28 25 | 1762 | 29 36 | 1828 | 30 47 | 1895 | 31 58 | 1962 | 32 69 | 2028 | 33 80 | 2095 | 34 91 |
| | 70 | 1188 | 16 97 | 1255 | 17 93 | 1322 | 18 88 | 1389 | 19 84 | 1456 | 20 80 | 1522 | 21 75 | 1590 | 22 71 | 1657 | 23 66 | 1724 | 24 62 | 1791 | 25 57 | 1858 | 26 53 | 1924 | 27 49 | 1991 | 28 44 | 2058 | 29 40 | 2125 | 30 36 |
| | 80 | 1213 | 15 17 | 1281 | 16 01 | 1348 | 16 85 | 1415 | 17 69 | 1483 | 18 53 | 1550 | 19 38 | 1617 | 20 22 | 1685 | 21 05 | 1752 | 21 90 | 1819 | 22 74 | 1887 | 23 58 | 1954 | 24 42 | 2021 | 25 26 | 2089 | 26 10 | 2156 | 26 94 |
| | 90 | 1237 | 13 75 | 1305 | 14 50 | 1372 | 15 29 | 1440 | 16 00 | 1507 | 16 75 | 1575 | 17 50 | 1643 | 18 25 | 1710 | 19 00 | 1778 | 19 75 | 1845 | 20 50 | 1913 | 21 25 | 1980 | 22 00 | 2048 | 22 75 | 2115 | 23 50 | 2183 | 24 25 |
| | 100 | 1262 | 12 62 | 1330 | 13 30 | 1398 | 13 98 | 1466 | 14 66 | 1534 | 15 34 | 1601 | 16 01 | 1669 | 16 69 | 1737 | 17 38 | 1805 | 18 05 | 1873 | 18 73 | 1941 | 19 41 | 2009 | 20 09 | 2076 | 20 76 | 2144 | 21 44 | 2212 | 22 12 |
| | 101 | 1265 | 12 52 | 1333 | 13 20 | 1400 | 13 87 | 1468 | 14 54 | 1537 | 15 21 | 1604 | 15 89 | 1672 | 16 56 | 1740 | 17 23 | 1808 | 17 90 | 1876 | 18 57 | 1944 | 19 24 | 2012 | 19 92 | 2080 | 20 59 | 2148 | 21 26 | 2216 | 21 93 |
| | 102 | 1270 | 12 45 | 1338 | 13 12 | 1406 | 13 79 | 1475 | 14 46 | 1543 | 15 13 | 1611 | 15 79 | 1679 | 16 46 | 1747 | 17 12 | 1815 | 17 79 | 1883 | 18 46 | 1952 | 19 13 | 2020 | 19 80 | 2089 | 20 47 | 2155 | 21 13 | 2224 | 21 80 |
| | 103 | 1273 | 12 36 | 1341 | 13 02 | 1409 | 13 68 | 1477 | 14 34 | 1545 | 15 00 | 1614 | 15 67 | 1681 | 16 32 | 1750 | 16 99 | 1818 | 17 65 | 1886 | 18 31 | 1955 | 18 97 | 2023 | 19 63 | 2091 | 20 30 | 2159 | 20 96 | 2227 | 21 62 |
| | 104 | 1275 | 12 26 | 1344 | 12 92 | 1412 | 13 57 | 1480 | 14 23 | 1548 | 14 89 | 1616 | 15 54 | 1685 | 16 20 | 1753 | 16 85 | 1821 | 17 51 | 1889 | 18 17 | 1957 | 18 82 | 2026 | 19 48 | 2094 | 20 13 | 2162 | 20 79 | 2230 | 21 45 |
| | 105 | 1278 | 12 16 | 1346 | 12 81 | 1414 | 13 46 | 1483 | 14 12 | 1551 | 14 76 | 1619 | 15 41 | 1687 | 16 07 | 1756 | 16 72 | 1824 | 17 37 | 1892 | 18 02 | 1960 | 18 67 | 2029 | 19 32 | 2097 | 19 97 | 2165 | 20 62 | 2233 | 21 27 |
| | 106 | 1280 | 12 07 | 1349 | 12 72 | 1417 | 13 37 | 1485 | 14 01 | 1554 | 14 66 | 1622 | 15 30 | 1690 | 15 94 | 1758 | 16 59 | 1827 | 17 23 | 1895 | 17 88 | 1963 | 18 52 | 2032 | 19 17 | 2100 | 19 81 | 2168 | 20 45 | 2236 | 21 10 |
| | 107 | 1283 | 11 99 | 1351 | 12 63 | 1420 | 13 27 | 1488 | 13 91 | 1556 | 14 54 | 1625 | 15 18 | 1693 | 15 82 | 1761 | 16 46 | 1830 | 17 10 | 1898 | 17 74 | 1966 | 18 38 | 2035 | 19 01 | 2103 | 19 65 | 2171 | 20 29 | 2239 | 20 93 |
| | 108 | 1286 | 11 90 | 1354 | 12 54 | 1422 | 13 17 | 1491 | 13 80 | 1559 | 14 43 | 1627 | 15 07 | 1696 | 15 70 | 1764 | 16 33 | 1832 | 16 97 | 1900 | 17 60 | 1969 | 18 23 | 2037 | 18 87 | 2106 | 19 50 | 2174 | 20 13 | 2243 | 20 76 |
| | 109 | 1288 | 11 82 | 1356 | 12 44 | 1425 | 13 02 | 1493 | 13 70 | 1562 | 14 33 | 1630 | 14 95 | 1698 | 15 58 | 1767 | 16 21 | 1835 | 16 84 | 1904 | 17 46 | 1972 | 18 09 | 2040 | 18 72 | 2109 | 19 35 | 2177 | 19 97 | 2246 | 20 60 |
| | 110 | 1291 | 11 73 | 1359 | 12 35 | 1427 | 12 96 | 1496 | 13 58 | 1564 | 14 22 | 1633 | 14 84 | 1701 | 15 47 | 1770 | 16 09 | 1838 | 16 71 | 1906 | 17 3[illegible] | 1975 | 17 95 | 2043 | 18 58 | 2112 | 19 20 | 2180 | 19 82 | 2249 | 20 44 |
| | 111 | 1293 | 11 65 | 1362 | 12 27 | 1430 | 12 88 | 1499 | 13 50 | 1567 | 14 12 | 1635 | 14 73 | 1704 | 15 35 | 1772 | 15 97 | 1841 | 16 58 | 1909 | 17 20 | 1978 | 17 82 | 2046 | 18 44 | 2115 | 19 05 | 2183 | 19 67 | 2252 | 20 29 |
| | 112 | 1296 | 11 57 | 1364 | 12 18 | 1433 | 12 79 | 1501 | 13 40 | 1570 | 14 02 | 1638 | 14 63 | 1707 | 15 24 | 1775 | 15 85 | 1844 | 16 46 | 1912 | 17 07 | 1981 | 17 69 | 2049 | 18 30 | 2118 | 18 91 | 2186 | 19 52 | 2255 | 20 13 |
| | 113 | 1298 | 11 50 | 1367 | 12 10 | 1435 | 12 70 | 1504 | 13 31 | 1572 | 13 92 | 1641 | 14 52 | 1709 | 15 13 | 1778 | 15 73 | 1847 | 16 34 | 1915 | 16 95 | 1984 | 17 55 | 2052 | 18 16 | 2121 | 18 77 | 2189 | 19 37 | 2258 | 19 98 |
| | 114 | 1301 | 11 41 | 1369 | 12 01 | 1438 | 12 61 | 1507 | 13 22 | 1575 | 13 82 | 1644 | 14 42 | 1712 | 15 02 | 1781 | 15 62 | 1849 | 16 22 | 1918 | 16 82 | 1987 | 17 43 | 2055 | 18 03 | 2124 | 18 63 | 2192 | 19 23 | 2261 | 19 83 |
| | 115 | 1303 | 11 33 | 1372 | 11 93 | 1441 | 12 53 | 1509 | 13 12 | 1578 | 13 72 | 1646 | 14 32 | 1715 | 14 91 | 1784 | 15 51 | 1852 | 16 11 | 1921 | 16 70 | 1989 | 17 30 | 2058 | 17 90 | 2127 | 18 49 | 2195 | 19 09 | 2264 | 19 69 |
| | 116 | 1306 | 11 26 | 1375 | 11 84 | 1443 | 12 44 | 1512 | 13 03 | 1581 | 13 63 | 1649 | 14 22 | 1718 | 14 81 | 1786 | 15 40 | 1855 | 15 99 | 1924 | 16 58 | 1992 | 17 18 | 2061 | 17 77 | 2130 | 18 36 | 2198 | 18 95 | 2267 | 19 54 |
| | 117 | 1308 | 11 18 | 1377 | 11 77 | 1446 | 12 36 | 1515 | 12 94 | 1583 | 13 53 | 1652 | 14 12 | 1721 | 14 71 | 1789 | 15 29 | 1858 | 15 88 | 1927 | 16 47 | 1995 | 17 06 | 2064 | 17 65 | 2133 | 18 23 | 2201 | 18 81 | 2270 | 19 40 |
| | 118 | 1311 | 11 11 | 1380 | 11 69 | 1448 | 12 26 | 1517 | 12 86 | 1586 | 13 44 | 1655 | 14 02 | 1723 | 14 60 | 1792 | 15 19 | 1861 | 15 77 | 1929 | 16 36 | 1998 | 16 93 | 2067 | 17 52 | 2136 | 18 10 | 2204 | 18 68 | 2273 | 19 26 |
| | 119 | 1314 | 11 04 | 1382 | 11 62 | 1451 | 12 19 | 1520 | 12 77 | 1589 | 13 35 | 1657 | 13 93 | 1726 | 14 51 | 1796 | 15 09 | 1864 | 15 66 | 1932 | 16 24 | 2001 | 16 82 | 2070 | 17 39 | 2139 | 17 97 | 2207 | 18 55 | 2276 | 19 13 |
| | 120 | 1316 | 10 97 | 1385 | 11 54 | 1454 | 12 11 | 1522 | 12 68 | 1591 | 13 26 | 1660 | 13 83 | 1729 | 14 40 | 1798 | 14 98 | 1866 | 15 55 | 1935 | 16 13 | 2004 | 16 70 | 2073 | 17 27 | 2142 | 17 85 | 2210 | 18 42 | 2279 | 18 99 |
| | 121 | 1319 | 10 90 | 1388 | 11 47 | 1456 | 12 04 | 1525 | 12 60 | 1594 | 13 17 | 1663 | 13 74 | 1732 | 14 31 | 1800 | 14 88 | 1869 | 15 45 | 1938 | 16 02 | 2007 | 16 59 | 2076 | 17 16 | 2145 | 17 72 | 2213 | 18 29 | 2282 | 18 86 |
| | 122 | 1321 | 10 83 | 1390 | 11 39 | 1459 | 11 96 | 1528 | 12 52 | 1597 | 13 09 | 1666 | 13 65 | 1734 | 14 22 | 1803 | 14 78 | 1872 | 15 35 | 1941 | 15 91 | 2010 | 16 47 | 2079 | 17 04 | 2148 | 17 60 | 2216 | 18 17 | 2285 | 18 73 |
| | 123 | 1324 | 10 76 | 1393 | 11 32 | 1462 | 11 88 | 1530 | 12 44 | 1599 | 13 00 | 1668 | 13 56 | 1737 | 14 12 | 1806 | 14 68 | 1875 | 15 24 | 1944 | 15 80 | 2013 | 16 36 | 2082 | 16 92 | 2151 | 17 48 | 2219 | 18 04 | 2288 | 18 60 |
| | 124 | 1326 | 10 70 | 1395 | 11 25 | 1464 | 11 81 | 1533 | 12 36 | 1602 | 12 92 | 1671 | 13 48 | 1740 | 14 03 | 1809 | 14 59 | 1878 | 15 14 | 1947 | 15 70 | 2016 | 16 26 | 2085 | 16 81 | 2154 | 17 37 | 2222 | 17 92 | 2291 | 18 48 |
| | 125 | 1329 | 10 63 | 1398 | 11 18 | 1467 | 11 73 | 1536 | 12 29 | 1605 | 12 84 | 1674 | 13 39 | 1743 | 13 95 | 1812 | 14 49 | 1881 | 15 05 | 1950 | 15 60 | 2019 | 16 15 | 2088 | 16 70 | 2157 | 17 25 | 2226 | 17 80 | 2294 | 18 36 |
| | 126 | 1331 | 10 57 | 1400 | 11 11 | 1469 | 11 66 | 1538 | 12 21 | 1607 | 12 76 | 1676 | 13 31 | 1746 | 13 85 | 1814 | 14 40 | 1883 | 14 95 | 1952 | 15 50 | 2022 | 16 04 | 2091 | 16 59 | 2160 | 17 14 | 2229 | 17 69 | 2298 | 18 23 |
| | 127 | 1334 | 10 50 | 1403 | 11 05 | 1472 | 11 59 | 1541 | 12 13 | 1610 | 12 68 | 1673 | 13 22 | 1748 | 13 77 | 1817 | 14 31 | 1886 | 14 85 | 1955 | 15 40 | 2024 | 15 94 | 2093 | 16 48 | 2162 | 17 03 | 2232 | 17 57 | 2301 | 18 11 |
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| | 129 | 1339 | 10 38 | 1408 | 10 92 | 1477 | 11 45 | 1546 | 11 99 | 1616 | 12 52 | 1685 | 13 06 | 1754 | 13 60 | 1823 | 14 13 | 1892 | 14 67 | 1961 | 15 20 | 2030 | 15 74 | 2099 | 16 27 | 2168 | 16 81 | 2238 | 17 35 | 2307 | 17 88 |
| | 130 | 1342 | 10 32 | 1411 | 10 85 | 1480 | 11 38 | 1549 | 11 92 | 1618 | 12 45 | 1687 | 12 98 | 1757 | 13 51 | 1826 | 14 04 | 1895 | 14 58 | 1964 | 15 11 | 2033 | 15 64 | 2102 | 16 17 | 2172 | 16 70 | 2241 | 17 24 | 2310 | 17 77 |
| | 131 | 1344 | 10 26 | 1413 | 10 79 | 1483 | 11 32 | 1552 | 11 85 | 1621 | 12 37 | 1690 | 12 90 | 1759 | 13 43 | 1829 | 13 96 | 1898 | 14 49 | 1967 | 15 01 | 2036 | 15 54 | 2105 | 16 07 | 2174 | 16 60 | 2244 | 17 13 | 2313 | 17 65 |
| | 132 | 1347 | 10 20 | 1416 | 10 73 | 1485 | 11 25 | 1554 | 11 78 | 1624 | 12 30 | 1693 | 12 82 | 1762 | 13 35 | 1831 | 13 87 | 1901 | 14 40 | 1970 | 14 92 | 2039 | 15 45 | 2108 | 15 97 | 2177 | 16 50 | 2247 | 17 02 | 2316 | 17 54 |
| | 133 | 1349 | 10 15 | 1419 | 10 67 | 1488 | 11 19 | 1557 | 11 71 | 1626 | 12 23 | 1696 | 12 75 | 1765 | 13 27 | 1834 | 13 79 | 1903 | 14 31 | 1973 | 14 83 | 2042 | 15 35 | 2111 | 15 87 | 2180 | 16 39 | 2250 | 16 91 | 2319 | 17 44 |
| | 134 | 1352 | 10 09 | 1421 | 10 61 | 1490 | 11 12 | 1560 | 11 64 | 1629 | 12 16 | 1698 | 12 67 | 1767 | 13 19 | 1837 | 13 71 | 1906 | 14 23 | 1976 | 14 74 | 2045 | 15 26 | 2114 | 15 78 | 2183 | 16 29 | 2253 | 16 81 | 2322 | 17 33 |
| | 135 | 1354 | 10 03 | 1424 | 10 55 | 1493 | 11 06 | 1562 | 11 57 | 1632 | 12 08 | 1701 | 12 60 | 1770 | 13 11 | 1840 | 13 63 | 1909 | 14 14 | 1978 | 14 65 | 2048 | 15 17 | 2117 | 15 68 | 2186 | 16 20 | 2256 | 16 71 | 2325 | 17 22 |
| | 136 | 1357 | 9 98 | 1426 | 10 49 | 1496 | 11 00 | 1565 | 11 51 | 1634 | 12 02 | 1704 | 12 53 | 1773 | 13 04 | 1843 | 13 55 | 1912 | 14 06 | 1981 | 14 57 | 2051 | 15 08 | 2120 | 15 59 | 2189 | 16 10 | 2259 | 16 61 | 2328 | 17 12 |
| | 137 | 1360 | 9 92 | 1429 | 10 43 | 1498 | 10 94 | 1568 | 11 44 | 1637 | 11 95 | 1707 | 12 46 | 1776 | 12 96 | 1845 | 13 47 | 1915 | 13 98 | 1984 | 14 48 | 2054 | 14 99 | 2123 | 15 50 | 2192 | 16 00 | 2262 | 16 51 | 2331 | 17 02 |
| | 138 | 1362 | 9 87 | 1432 | 10 37 | 1501 | 10 88 | 1570 | 11 38 | 1640 | 11 88 | 1709 | 12 39 | 1779 | 12 89 | 1848 | 13 39 | 1918 | 13 90 | 1987 | 14 40 | 2056 | 14 90 | 2126 | 15 40 | 2195 | 15 91 | 2265 | 16 41 | 2334 | 16 91 |
| | 139 | 1365 | 9 82 | 1434 | 10 32 | 1504 | 10 82 | 1573 | 11 32 | 1643 | 11 82 | 1712 | 12 32 | 1781 | 12 82 | 1851 | 13 32 | 1920 | 13 82 | 1990 | 14 32 | 2059 | 14 82 | 2128 | 15 31 | 2198 | 15 82 | 2268 | 16 31 | 2337 | 16 81 |
| | 140 | 1367 | 9 77 | 1437 | 10 26 | 1506 | 10 76 | 1576 | 11 26 | 1645 | 11 75 | 1715 | 12 25 | 1784 | 12 74 | 1854 | 13 24 | 1923 | 13 74 | 1993 | 14 23 | 2062 | 14 73 | 2132 | 15 23 | 2201 | 15 72 | 2271 | 16 22 | 2340 | 16 72 |
| | 141 | 1370 | 9 71 | 1439 | 10 21 | 1509 | 10 70 | 1578 | 11 19 | 1648 | 11 69 | 1717 | 12 18 | 1787 | 12 67 | 1857 | 13 17 | 1926 | 13 66 | 1996 | 14 15 | 2065 | 14 65 | 2135 | 15 14 | 2204 | 15 63 | 2274 | 16 13 | 2343 | 16 62 |
| | 142 | 1372 | 9 66 | 1442 | 10 15 | 1511 | 10 64 | 1581 | 11 13 | 1651 | 11 62 | 1720 | 12 11 | 1790 | 12 60 | 1859 | 13 09 | 1930 | 13 58 | 1999 | 14 07 | 2068 | 14 56 | 2138 | 15 05 | 2207 | 15 54 | 2277 | 16 03 | 2346 | 16 52 |
| | 143 | 1374 | 9 61 | 1444 | 10 10 | 1514 | 10 59 | 1584 | 11 07 | 1653 | 11 56 | 1723 | 12 05 | 1793 | 12 54 | 1862 | 13 03 | 1932 | 13 51 | 2001 | 14 00 | 2071 | 14 48 | 2141 | 14 97 | 2210 | 15 46 | 2280 | 15 94 | 2349 | 16 43 |
| | 144 | 1378 | 9 57 | 1447 | 10 05 | 1517 | 10 53 | 1586 | 11 02 | 1656 | 11 50 | 1726 | 11 98 | 1795 | 12 47 | 1865 | 12 95 | 1935 | 13 43 | 2004 | 13 92 | 2074 | 14 40 | 2144 | 14 89 | 2213 | 15 37 | 2283 | 15 85 | 2353 | 16 34 |
| | 145 | 1380 | 9 52 | 1450 | 10 00 | 1519 | 10 48 | 1589 | 10 96 | 1659 | 11 44 | 1728 | 11 92 | 1798 | 12 40 | 1868 | 12 88 | 1937 | 13 36 | 2007 | 13 84 | 2077 | 14 32 | 2146 | 14 80 | 2216 | 15 28 | 2286 | 15 76 | 2356 | 16 25 |
| | 146 | 1382 | 9 47 | 1452 | 9 95 | 1522 | 10 42 | 1592 | 10 90 | 1661 | 11 38 | 1731 | 11 86 | 1801 | 12 33 | 1871 | 12 81 | 1940 | 13 29 | 2010 | 13 77 | 2080 | 14 24 | 2149 | 14 72 | 2219 | 15 20 | 2289 | 15 68 | 2359 | 16 15 |
| | 147 | 1385 | 9 42 | 1455 | 9 90 | 1525 | 10 37 | 1594 | 10 85 | 1664 | 11 32 | 1734 | 11 79 | 1804 | 12 27 | 1873 | 12 74 | 1943 | 13 22 | 2013 | 13 69 | 2083 | 14 17 | 2152 | 14 64 | 2222 | 15 12 | 2292 | 15 59 | 2362 | 16 07 |
| | 148 | 1388 | 9 38 | 1457 | 9 85 | 1527 | 10 32 | 1597 | 10 79 | 1667 | 11 26 | 1737 | 11 73 | 1806 | 12 20 | 1876 | 12 68 | 1946 | 13 15 | 2016 | 13 62 | 2086 | 14 09 | 2155 | 14 56 | 2225 | 15 03 | 2295 | 15 51 | 2365 | 15 98 |
| | 149 | 1390 | 9 33 | 1460 | 9 80 | 1530 | 10 26 | 1600 | 10 74 | 1669 | 11 20 | 1739 | 11 67 | 1809 | 12 14 | 1879 | 12 61 | 1949 | 13 08 | 2019 | 13 55 | 2088 | 14 02 | 2158 | 14 49 | 2228 | 14 95 | 2298 | 15 42 | 2368 | 15 89 |
| | 150 | 1393 | 9 28 | 1463 | 9 75 | 1532 | 10 22 | 1602 | 10 68 | 1672 | 11 15 | 1742 | 11 61 | 1812 | 12 08 | 1882 | 12 55 | 1952 | 13 01 | 2022 | 13 48 | 2091 | 13 94 | 2161 | 14 44 | 2231 | 14 87 | 2301 | 15 34 | 2371 | 15 81 |

*Rounded off to the nearest dollar.

Note: These figures are for illustrative purposes only and do not represent the costs of any known telephone company.

APPENDIX L

Trebedies Island: The Economics of Monopoly Management SCRIPT

Narrator: This is the situation. Telephone service is about to be established on Trebedies Island for the first time. You are one of several companies bidding for the right to install and maintain this system. The winning bid will be selected by three representatives: one from the island homeowners association, one from a group of interested investors, and one from a group of business people. These three representatives are ready to state their concerns to you. But before we hear from them, let's go over the facts which will help you understand the situation more clearly.

First, look at the map, (pause) you will see that a large segment of land in the centre of Trebedies Island has been set aside by the government for use as a public park. To the east of this, along the mainland side of the island, a strip of land is zoned for use by commercial concerns. A group of small shops and stores is being built to take advantage of the tourist trade generated by the park. But these businesses must have telephone service in order to operate. They are ready to guarantee a subscription of one hundred and one 'phones, and expect the number of subscribers to remain the same for several years.

On the other side of the island is the small community of homeowners. According to Trebedies law, no telephone system can be set up on the island without their consent. Although they want this system very much, many of them cannot afford to pay high monthly telephone bills. Naturally the homeowners association will not vote for any bid which establishes telephone rates higher than most homeowners feel they can afford.

There is another factor to keep in mind. Because of the laws set up to protect the natural environment of the park it is likely that neither the residential nor the business communities will undergo substantial growth. In other words, the population and character of the island is stable.

Now, let us hear from the three representatives. First, Ms K A , Chairman of the Island Homeowners' Association.

Ms A : Thank you. I must tell you that we are delighted with the possibility of telephone service on the island. Shortwave radio is okay, but it doesn't compare with the convenience, reliability, and high service of a modern telephone system. On two other occasions we have investigated the possibility of establishing a 'phone system but decided it would be just too expensive. A mainland firm did a study of price on the number of subscribers. That report will be handed out shortly. As you will see, it clearly shows our people will not subscribe to 'phone service unless the price is right. Since it is our goal to have telephone service for as many islanders as possible, I must make it clear that as our representative I will not be authorized to vote for a bid so high that most of us wouldn't be able to afford it. If you want my vote, keep the price of telephone service down for the island homeowners.

Narrator: Thank you, Ms A . Now here is the representative of a group of potential investors who are interested in the new telephone system, Ms T M .

Ms M : As you know, Trebedies law requires that no individual company or firm may own more than 5% of any telephone company operating on the island. The 5% law makes it difficult for a small company such as

/yours

yours to acquire the capital to get started. I represent a group of twenty investors, each prepared to buy a 5% share of the new telephone company, provided, of course, that the return we can expect from our money is competitive with other investments of equal risk. A report of Pierce Investment Company will be handed out later. I'd suggest you study it. Naturally, I'll vote for the bid with the highest return for our money but I won't vote for any bid unless it is higher than what we can get from other types of investments. And may I remind you that the expectations of our group are typical. If you are not able to come up with a bid which satisfies us, it is unlikely that you will be satisfied either.

Narrator: Thank you Ms M. . Finally, we will hear from Mr P G , a representative of the Trebedies Island business concerns.

Mr G : Thank you. I, and other small-business people on Trebedies Island, would be pleased if every islander who wanted a telephone could have one. We really would. But the islanders must be prepared to pay their fair share. I've obtained a copy of the Consultant's Report on Monthly Revenue required to support various numbers of telephones. A copy of the report will be given to you later. As you will see, just the fact that we here are willing to guarantee a subscription of a hundred and one 'phones has dramatically reduced the cost of the 'phone system to the islanders. We don't want to be charged more than our fair proportional share on top of what already amounts to a subsidy. I'll admit that a telephone system is very important to our business, but if you set our rates so high that it makes it hard for us to make a profit, we might have to forgat the entire enterprise.

Narrator: Thank you, Mr G .

As the narrator gives instructions, hand out the information sheets. Ensure that each company receives its own material and not that of another company.

Narrator: To make your bids acceptable, you will have to use the three charts given to you. While, at first, these may look complicated, they are actually very simple to understand. A brief explanation will be given of each.

First, examin the Bingham & Associates Report and the attached demand schedule. (Pause and allow time for this) In the left hand column headed "(PRICE) MONTHLY RATE" telephone rates are listed. Directly across from these are the number of homeowners who would subscribe at these rates. As you can see, if the monthly rate were $11-00, only nine islanders would be willing to subscribe. So to satisfy the homeowners you will have to refer to this chart and offer a rate which most of them can afford. Be sure to read "A VERY IMPORTANT NOTE" at the top righthand side of the demand schedule.

Next, look at the Pierce Investment Company Report. (Pause, allow time) It is merely a listing of returns on different types of investments. Since you must give the investors a decent rate of return if you expect them to put up money, you must refer to this report to learn the minimum amount you must offer to the investors to be competitive with other types of investments.

Now look at the sheet with all the numbers on it. (Pause and allow time)

These are the rates of return you can offer the investors. Going down the farthest column to the left are numbers of telephones installed. Since the businesses have guaranteed a subscription of one hundred and one 'phones, look at that number. It has an arrow next to it. Say you wanted to give your investors a rate of return of 12%. Look across the row until you see the figures in the square under the 12% column. The figure, under column A is $1 900-00. This is the total amount of revenue required per month to pay expenses of one hundred and one 'phones and to give the investors a 12% rate of return. The figure under column B is $19-24. This is the amount you would have to charge per 'phone per month to raise the $1 944-00 listed in column A. Remember, however, that you may not want to charge the homeowners and the businesses the same price. For example, you may want to charge the businesses more, so that you can charge the homeowners less and still give a decent return to the investors.

Now look at the Bid Form (or tender). Write in your answers to questions A through to H. When you have done this, turn your bid form in to the three representatives so that they can select the winning bid. Each company is allowed only one bid.

As you complete your bid, the representatives will be around to lobby for their point of view.

It is advisable not to let your competitors know what you are planning.

Complete your bid form now.

# Business Representative

## Business Representative

You represent a group of business persons who are planning to open shops, restaurants, and offices along the Baranga Lagoon on Trebedies Island.

You have two tasks during the simulation: (1) When the competing companies are trying to decide on their bids, you go to each one of them and lobby for the best deal possible for the business persons.(2) Once the bids are submitted, you select the bids(s) which meet your demands and expectations.

To help you in your lobbying, you should be aware of the following facts:

A. You must have telephone service. There is no way you can operate your business without it.

B. You will guarantee a subscription of one hundred and one phones for twenty years. As the Consultant's Report on Dividends and Revenues illustrates, each additional phone provided reduces the average price of all phones. So the guarantee of 101 phones means that the first homeowner phone, the 102nd one, is much cheaper than if it were, in fact, the first phone on the island. So, in effect, your guarantee makes all homeowners' phones cheaper. The guarantee of 101 phones, in other words, could be looked upon as a subsidy for the homeowners.

C. Trebedies law states that no company can establish telephone service on the island without the consent of the few homeowners who live in the northwest area of the island

D. Because the island hor eowners are not in urgent need of telephones, you will probably have to sudsidize their service, but you don't want to be taken advantage of.

E. Though your demand is inelastic, you must be as firm as possible in the negotiations. You can point out that while you are willing to subsidize the homeowners you cannot do so to the point where it will become unprofitable for you. They must pay their fair share or the entire enterprise could collapse.



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# Business Representative

## Business Representative

You represent a group of business persons who are planning to open shops, restaurants, and offices along the Baranga Lagoon on Trebedies Island.

You have two tasks during the simulation: (1) When the competing companies are trying to decide on their bids, you go to each one of them and lobby for the best deal possible for the business persons.(2) Once the bids are submitted, you select the bids(s) which meet your demands and expectations.

To help you in your lobbying, you should be aware of the following facts:

A. You must have telephone service. There is no way you can operate your business without it.

B. You will guarantee a subscription of one hundred and one phones for twenty years. As the Consultant's Report on Dividends and Revenues illustrates, each additional phone provided reduces the average price of all phones. So the guarantee of 101 phones means that the first homeowner phone, the 102nd one, is much cheaper than if it were, in fact, the first phone on the island. So, in effect, your guarantee makes all homeowners' phones cheaper. The guarantee of 101 phones, in other words, could be looked upon as a subsidy for the homeowners.

C. Trebedies law states that no company can establish telephone service on the island without the consent of the few homeowners who live in the northwest area of the island

D. Because the island homeowners are not in urgent need of telephones, you will probably have to subsidize their service, but you don't want to be taken advantage of.

E. Though your demand is inelastic, you must be as firm as possible in the negotiations. You can point out that while you are willing to subsidize the homeowners you cannot do so to the point where it will become unprofitable for you. They must pay their fair share or the entire enterprise could collapse.



Copyright

F. Since businesses rely more heavily on telephone service, it is common practice for them to be charged more for it than private homeowners. You can expect this, but you should not allow yourself to be gouged.

Try very hard to get the price of phone service for your people to be no more than $2.00 more than the service for the islanders. So if they are thinking of charging the islanders $10.00 per month then you should try to get service for no more than $12.00.

G. Courtesy requires that you:

(1) give the teams five or so minutes to prepare their individual bid before you begin lobbying for your position.

(2) leave the presence of any company which asks you to leave or otherwise indicates that they want you to leave.

(3) never stay at a table when another representative is present.

**Here Is How A Sample Conversation Might Go:**

**Business Representative:** "Hi, I'm the business representative. I see you've prepared a tentative bid. May I ask what you are proposing for the homeowners and for us business persons?"

**Company Person:** "$7.00 for the homeowners and $16.00 for business."

**Business Representative:** "I would say you are taking advantage of us. I certainly won't vote for any proposal that charges us more than double the homeowners representative. If we weren't in here with our 101 phone guarantee, they'd probably have to pay $20.00 a month for their phones. Now you want to subsidize them even more. It isn't fair."

**Company Person:** "What would you consider a fair price to be?"

**Business Representative** "No more than $9.00 and less if you can work it."

**Company Person:** "That's pretty low."

**Business Representative:** "Remember, I won't give my approval unless you give us a fair price."

**Company Person:** "We'll see what we can do."

**Business Representative** "Can't ask for anything more. I've got to move on to another company now. Goodbye."

# Homeowners' Association Representative

## Homeowners' Association Representative

You represent a group of island homeowners who have lived on Trebedies Island for many generations.

You have two tasks during the simulation: (1) When the competing companies are trying to decide on their bids, you go to each one of them and lobby for the best deal possible for the Homeowners' Association. (2) Once the bids are submitted, you select the bid(s) which meet your demands and expectations.

To help you in your lobbying, you should be aware of the following facts:

A. Your group does want and would benefit from the establishment of telephone service.

B. While you want this service, it is not essential. For years you have used short wave radios as your chief form of communication. While these in no way compare with the convenience, reliability, and high service of a refined telephone system, they are adequate. In other words, your position is not based on urgent need.

C Telephone service is essential for the businesses. They cannot function unless such a system exists for their use

D. Trebedies laws state that no company can operate telephone service on the island without the consent of your group

E. Your association has decided, beforehand, that they will accept monthly rates no higher than $7.00. It is your goal, of course, to try and bargain for the lowest possible rate. (A monthly rate of $7.00 would translate into a probable number of 39 subscribers. While this is acceptable, a lower rate with resulting higher numbers of subscribers is obviously preferred.)

F. The decision of the Homeowners' Association to accept $7.00 *must be kept confidential.* Your effectiveness and the strength of your bargaining power depends on it

G. Courtesy requires that you:

(1) give the teams five or so minutes to prepare their individual bid before you begin lobbying for your position.

(2) leave the presence of any company which asks you to leave or otherwise indicates that they want you to leave.

(3) never stay at a table when another representative is present.

## J. D. Bingham & Associates

1137 Boylston Street
Boston, Massachusetts 02115
617-263-3525

---

**To:** The Homeowners' Association

**Re:** Effect of the cost of phone service on demand

Members of the J. D. Bingham & Associates Company interviewed every potential subscriber to the phone service on Trebedies Island and analyzed the incomes and assets of a selected sample. The results of our study are presented in the chart below. It is our belief that the stability and character of the island population makes this projection very reliable.

| Monthly Rate | Probable Number of Subscribers |
|---|---|
| $ 1.00-$ 6.00 | 49 |
| $ 6.50 | 48 |
| $ 7.00 | 39 |
| $ 7.50 | 37 |
| $ 8.00 | 32 |
| $ 8.50 | 29 |
| $ 9.00 | 27 |
| $ 9.50 | 24 |
| $10.00 | 19 |
| $10.50 | 15 |
| $11.00 | 9 |
| $11.50 | 4 |
| $12.00 | 3 |
| $12.50 | 3 |
| $13.00-$17.50 | 2 |
| $17.50-$35.50 | 2 |
| $35.50 | 1 |

Appendix O

# Investors' Representative

## Investors' Representative

You represent a group of twenty investors prepared to provide the investment money for the telephone company which wins the bid.

You have two tasks during the simulation: (1) You go to each of the competing companies and lobby for the best deal possible for the investors' group while they are trying to decide on their bids. (2) Once the bids are submitted, you select the bid(s) which meet your expectations.

To help you in your lobbying, you should be aware of the following facts:

A. Trebedies law states that no individual, corporation, or institution may own more than 5% of any telephone company serving Trebedies Island. This law makes it difficult for a group to acquire the capital to start such a company. Since you have the capital already, you should stress this fact.

B. The expectations of your group of investors is typical of other groups. Unless the bids satisfy your group, it is unlikely they would satisfy any other group of investors which could be gathered.

C. The rate of return your investors would be willing to accept must be competitive with other investments of equal risk. This means *the investment must generate at least 9%.*

D. Though your group would accept 9%, it is your role to bargain for the highest rate of return possible. Be firm as you do this *and keep the fact that you would accept 9% confidential.*

E. Courtesy requires that you:

(1) give the teams five or so minutes to prepare their bids before you begin lobbying for your position.

(2) leave the presence of any company which asks you to leave or otherwise indicates that they want you to leave.

(3) never stay at a table when another representative is present.

F. On the following page is a sample conversation.

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APPENDIX P

| | |
|---|---|
| **Investors's Representative:** | "Hi, I'm the representative of the investors. My associates and I are ready to back the company who will give us a good return on our money. I see where you've got a tentative bid prepared. May I ask what you are proposing for us investors." |
| **Company Person:** | "Seven percent." |
| **Investors' Representative:** | "Seven percent? We can put our money in the bank with absolute safety and earn seven percent." |
| **Company person:** | "How about eight percent?" |
| **Investors' Representative** | "Not even close." |
| **Company Person:** | "What will you accept?" |
| **Investors' Representative:** | "I can't say because I'll be looking for the highest bid. But you'd better get us more than eight percent." |

**Pierce Investment Company** *
Two Hundred Seventh Ave.
Groton Island 1005
212-799-5000

Rates of Return for Various Types of Investments:

| | |
|---|---|
| **Bonds** | Bonds are one of the safest forms of investments. Present rate of return being offered averages 8%. |
| **Savings and Loan** | Long term deposits of $1,000 or more:<br>-six years = 7.75%<br>-four years = 7.5% |
| **Banks** | Long term deposits of $1,000 or more:<br>-six years = 7.5%<br>-four years = 7.25%<br>Regular savings accounts = 5% |
| **Preferred Stock** | Guaranteed rate of return. Amount offered tends to fluctuate with interest rates. During the last ten years rates have ranged from 6% to 9.75% averaging 8%. |
| **Common Stock** | Rate of return depends entirely on the stock. Average return on utilities in U.S.A. for past ten years is 8.7%. Average return for telephone companies in the U.S.A. during the past decade equals 7.5% |
| **Real Estate** | Depends entirely on the situation. High to low risk with high to low rates of return. |

*These figures are for illustrative purposes and do not necessarily reflect current rates.

Appendix P

APPENDIX Q

EVALUATION QUESTIONNIARE TREBEDIES ISLAND

STUDENT _____ DATE _____

1 The simulation was: (Underline the appropriate response)

Very boring. Boring. Neither boring nor interesting Interesting. Very interesting.

Comment:

_____

_____

2 As a way of learning Business Economics the simulation was:

Most ineffective Ineffective Both effective and ineffective Effective Very effective

because:

_____

_____

_____

3 Considering the time taken by the simulation, as a way of learning, it was:

A complete waste of time A waste of time No better or worse than any other way of learning Time well spent A real time-saver

because:

_____

_____

4 As part of the Business Economics course in the H Dip Ed curriculum, the simulation is:

Completely irrelevant Mostly irrelevant Possibly relevant Mostly relevant Completely relevant

because:

_____

_____

5 Would it be worth your while to repeat the simulation in a few days time?

Yes. No.

Comment: _____

_____

6 What, if anything, did you learn from the simulation game?

_____

_____

_____

_____

_____

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_____

_____

7 What improvements, if any, do you recommend?

_____

_____

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_____

_____

If you wish to add any further comments to any of the questions, please write on the blank side of the pages of this questionnaire.

Thank you for your help.

APPENDIX R

MONOPOLY MANAGEMENT - Transfer Retention Test _____
NAME OF STUDENT

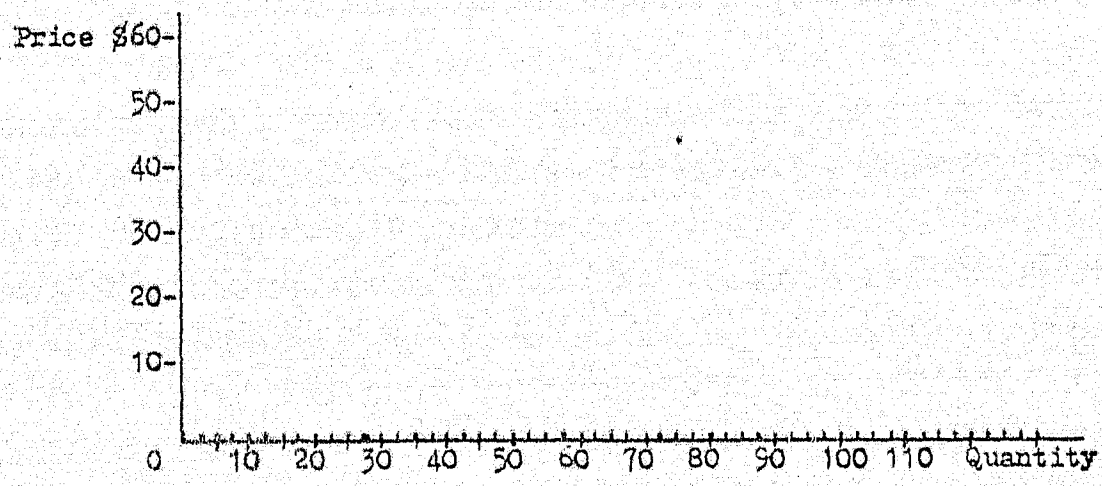
Question One

Given the 'monthly rate' (price) and the 'probable number of subscribers' (quantity), how would you calculate the 'total revenue' (gross income) that the telephone company may expect to receive? It is sufficient to give the formula.

---

Question Two

Show on the graph below, by sketching-in the shape of the curves, the responsiveness of demand to price that you experienced in the Trebedies Island simulation. To help you remember: the highest price a houseowner was prepared to pay was $35-50. The houseowners, all 49 of them, would have demanded a telephone if the monthly rental was $1-00 a month. There were 101 possible business subscribers. This information is given to help you fit the curve in the right place on the graph.




Question Three

Where your graph (in question 2) indicates by the slope of the curve that quantity demanded was very responsive to price change, write e > 1 next to that part of the curve. Indicate where demand showed no response to change in price by writing e = 0 next to that part of the curve.

NOTE: This test is to see how effective the simulation game is.
Thank you for your co-operation.

APPENDIX S

## PRICE ELASTICITY OF DEMAND

OBJECTIVES

After learning this material the student should be able to:

1 explain what is meant by the term 'price elasticity of demand';

2 define price elastic demand;

3 calculate price elasticity of demand;

4 distinguish between five degrees of elasticity, using as examples the demand for various commodities;

5 interpret from a graphical representation of the elasticity for a particular commodity, its relative elasticity, using one of five possible verbal and numerical categories;

6 discuss the importance of elasticity of demand to the entrepreneur, considering its effect on gross revenue.

ELASTICITY OF DEMAND

## 1 The concept of elasticity

What happens to demand when the price of a small popular make of motor car suddenly rises by R2 000? On the other hand, if the price of an expensive luxury car changes by R2 000, will it make very much difference to demand? Consider an increase of 10c in the price of bread rolls - how will consumers respond in the quantity they buy? After the price of the Rand Daily Mail was increased from 20c to 25c, there was for a time a decline in the circulation figures for the newspaper. Would an increase of 5c in the price of gramophone records have the same effect on sales of gramophone records?

(a) In each of these cases THE DEGREE OF RESPONSIVENESS OF DEMAND to the price changes is different.

(b) This degree of responsiveness is referred to as price elasticity of demand.

## 2 Definition of elastic demand

Demand is said to be elastic when a relatively small variation in price results in a marked variation in the amount demanded.

For example, if the price of one unit of a commodity at a certain time is 10c and a fal price of say 1c (i.e. a change of 10%), causes demand to increase by 25 percent, demand for that commodity is said to be elastic.

## 3 Calculating the price elasticity of demand

### (a) The formula

As a measure of the responsiveness of demand to changes in price, elasticity of demand (symbolized by the Greek letter eta) can be defined:

$$\eta = \frac{\text{- Percentage change in quantity}}{\text{Percentage change in price}}$$

This formula provides a precise measure of elasticity, $\eta$, by showing how the 'proportionate change in quantity demanded' rates against the 'proportionate change in price'. To do this, we simply put the quantity change (which is usually bigger if it is elastic) over the price change. The minus sign is there because demand curves generally slope downwards. Because of this negative slope of the demand curve, the change in quantity will always have the opposite sign to the change in price (either + or -). The minus sign in this definition of elasticity is simply designed to 'neutralize' this negative relationship between price and quantity changes so as to make elasticity of demand a positive number. This enables us in measuring elasticity to equate 'more responsive' with 'more elastic'.

### (b) Calculation of elasticity of demand

Table I - Demand Schedule

| Price per unit | Quantity demanded (in thousands) |
|---|---|
| 2c | 100 |
| 3c | 80 |
| 4c | 50 |

Table I is an extract from a market demand schedule:

(a) Assume that the price rises from 2c to 3c. Elasticity of demand (i.e. responsiveness to the 1c price change) is calculated by the formula an 3(a) above.

(b) Percentage change in quantity demanded $\Delta q$

$$\Delta q = \frac{(100 - 80)}{100} \times \frac{100}{1} = \frac{20}{100} \times \frac{100}{1} = 20\% \quad \text{or} \quad 0,2$$

(c) Percentage change in price $\Delta p$

$$\Delta p = \frac{(3 - 2)}{2} \times \frac{100}{1} = \frac{1}{2} \times \frac{100}{1} = 50\% \quad \text{or} \quad 0,5$$

(d) Elasticity of demand $\eta$

$$\eta = \frac{\Delta q}{\Delta p} = \frac{20}{100} \times \frac{100}{50} = \frac{2}{5} = 0,4$$

$\eta = 0,4$

$0,4 < 1$

The elasticity of demand is <u>less than one</u>. In other words, the demand is relatively inelastic to the 1c price change.

4 <u>Terminology of elasticity</u>

The degree of elasticity may range from <u>perfectly inelastic demand</u> at the one extreme to <u>infinitely elastic demand</u> at the other. Perfectly inelastic demand has a value of 0 (nought). Infinitely elastic demand has a value of $\infty$ (infinity). In between, lies unitary elasticity with a value of 1 - the <u>percentage</u> (or proportionate) change in price causes <u>the same percentage</u> change in quantity demanded.

4 (a) Perfectly inelastic demand In this case there is no change in the quantity demanded as the price changes. $\eta = 0$

The numerical value of this elasticity is equal to 0 (zero).

For example, no matter how high or how low a surgeon charged for an emergency appendix operation, the quantity of such operations demanded would not change at all.

(b) Relatively inelastic demand In this case there is a smaller proportionate (or percentage) change in the quantity demanded than in the proportionate change in price.

Numerically, the measure of such elasticity is greater than 0, but less than 1. $0 < \eta < 1$

For example, a large change in the price of table salt would have only a small effect on the quantity demanded. The response of demand to the change in price would be small.

(c) Unitary elasticity of demand In this case there is an equally proportionate change in the quantity demanded to the proportionate change in price.

The numerical value of this elasticity is equal to 1. $\eta = 1$

The the example in an earlier lesson of demand for T shirts also serves as an example of unitary elasticity of demand. Note that the curve is not of unitary elasticity throughout its length - see figure 1 under "Monopoly Market Supply and Total Consumer Expenditure". Elasticity approaches the value of 1 in the mid section of the curve. At low prices it becomes very elastic ($\eta > 1$), while above a certain price it becomes almost inelastic ($\eta < 1$).

4 (d) Relatively elastic demand In this case there is a larger proportionate change in the quantity demanded than in the proportionate change in price.
Numerically, the measure of elasticity is greater than 1, but less than $\infty$. $1 < \eta < \infty$
For example, the demand for fresh fruit by budget conscious households.

(e) Infinitely elastic demand In this case an infinitely small change in price results in an infinitely great change in demand. The numerical value of this extreme case of elasticity of demand is $\infty$. $\eta = \infty$
Is there actually such a market situation?

Price elasticities of demand thus range in value from 0 (perfectly inelastic), through 1 (unitary elasticity) to $\infty$ (infinite elasticity).

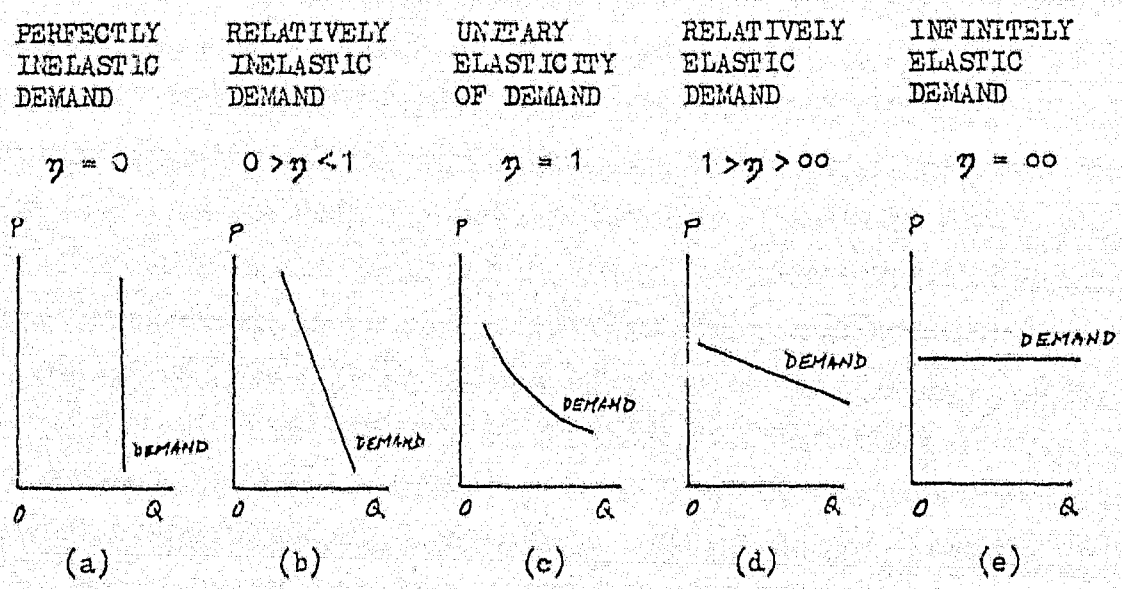



Figure 1 Graphical representation of price elasticities of demand

5 Graphical representation of elasticities of demand

Consider figure 1 (a) to (e).

a) Figure 1(a) shows a demand curve of zero elasticity (i.e. perfectly inelastic). The same quantity is demanded whatever the price. The value of elasticity of demand is nought.

b) The curve in figure 1(b) is relatively inelastic. In other words, it has some elasticity, but not very much. It requires a relatively big change in price to cause only a small change in the quantity demanded. Elasticity is not as great as 1, but it is greater than 0.

c) Figure 1(c) shows a demand curve of unitary elasticity. $\eta = 1$
Note: A demand curve does not necessarily have the same degree of elasticity over the whole length of the curve. The extremities of the usual demand curve tend to be inelastic at high prices and elastic at low prices. In between there usually lies a point of unitary elasticity. Elasticity may measure responsiveness of demand to changes in price at a given point on the curve, rather than for the curve as a whole.

d) The curve in figure 1(d) is relatively elastic. A small change in price will precipitate a relatively larger change in the quantity demanded. Demand is very responsive to change in price. Elasticity is greater than 1 and may increase virtually to oo.

e) Figure 1(e) shows a demand curve of infinite elasticity. Consumers purchase all that they can provided price does not change.

## 6 The importance of elasticity of demand to the entrepreneur

The importance of elasticity of demand to the entrepreneur is the effect it has on the sales turnover of the firm. Sales turnover involves both the gross income of the firm and the quantity of goods that have to be produced.

The sales revenue of any one supplier to a market represents a share of the total consumer expenditure. An increase in the total expenditure on the product demanded will mean a proportionate increase in sales for the individual supplier.

We know that a supplier's sales revenue (or gross income) is equal to the price charged for each unit sold, multiplied by the number or quantity of units sold.

In market situations where the supplier is able to set prices, it is important to know how responsive consumers' demand will be to the raising or lowering of prices. This responsiveness, as we have seen, may be represented by the slope of the demand curve.

Consider the examples in figures 2 to 4 below.

In general, where elasticity of demand is unitary, as in figure 2, a change in price will not affect total expenditure. That is, a fall in price of 2 percent is followed by an increase of 2 percent in the amount (quantity) purchased.

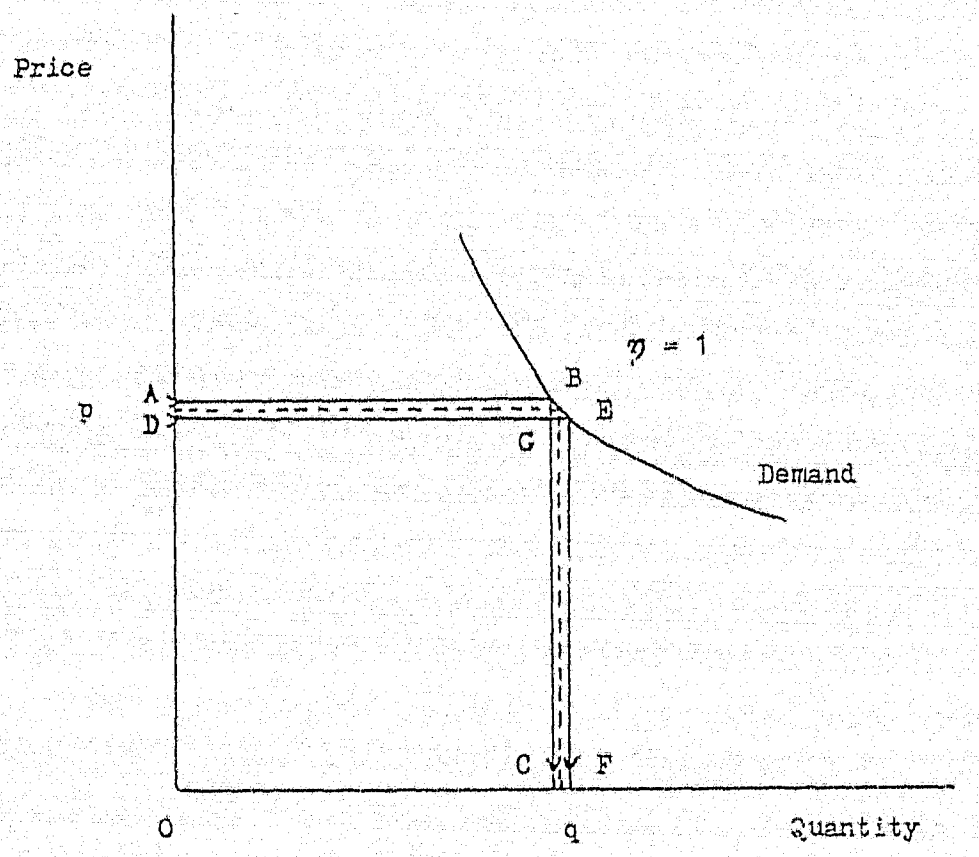



Figure 2 The effect of unitary price elasticity of demand on total expenditure.

Note that the rectangles ABCO and DEFO which represent two different total expenditures (at price A and price D respectively) are equal. The slope of the demand curve is such that a change in price BG is proportional to a change in quantity GE in a ratio of 1:1. $(\frac{1}{1} = 1)$

Where elasticity of demand is greater than one $(\eta > 1)$: a fall in price $(-\Delta p)$ will increase total expenditure; and a rise in price will decrease it. See figure 3 below.

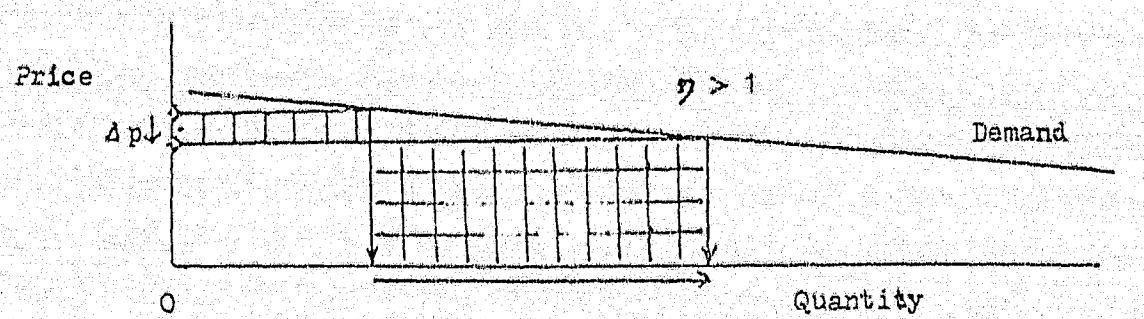



Figure 3 The greater than unit effect of elasticity of demand on total expenditure.

Conversely, where elasticity is less than one ($\eta < 1$): a fall in price will decrease total expenditure; and a rise in price will increase it See figure 4 below.

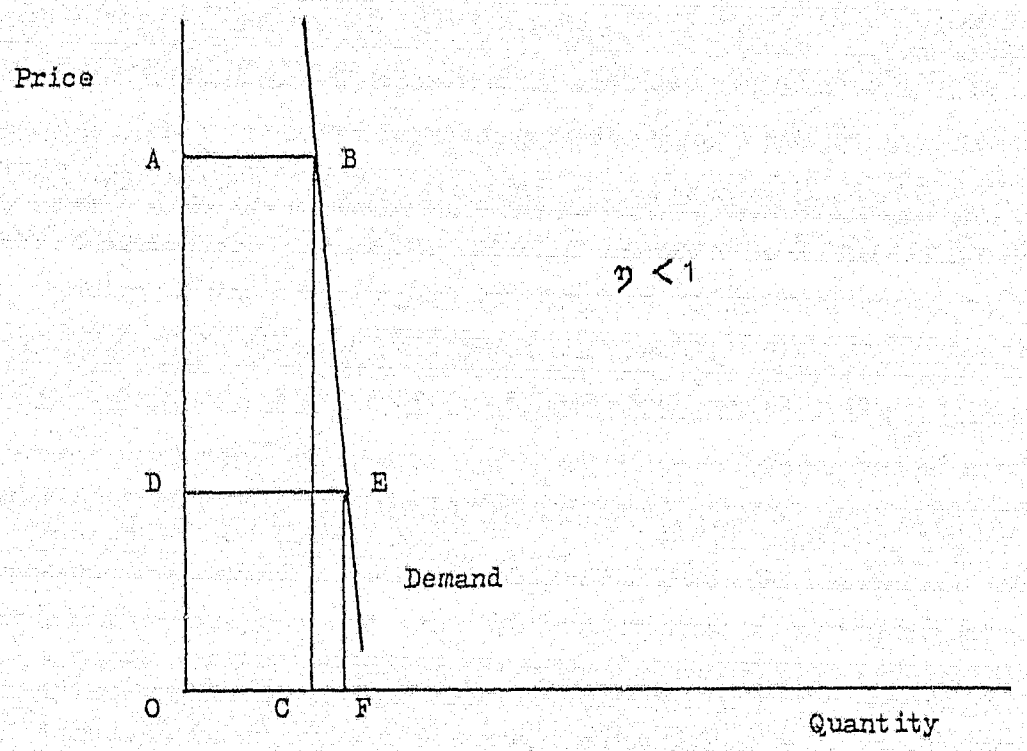



Figure 4 The less than unit effect of elasticity of demand on total expenditure.

Compare the area of ABCO with DEFO. (Price x Quantity = Expenditure)

APPENDIX T

Business Economics (Education) I Evaluation Questionnaire

STUDENT _____ DATE _____

This is the final questionnaire. The twenty questions that follow are in response to issues raised in the earlier questionnaires by members of the class. It is important to know what you as an individual think in these matters. Please answer for yourself only. The help you have already given in evaluating this programme is much appreciated. Your advice will contribute to improvement of the curriculum. Thank you.

1. Do you think that there should have been stricter rules and more discipline so that there may be order in the game? YES NO
(Please underline either "yes" or "no" above) Comment if you wish:

_____

_____

_____

2(a) Speaking for yourself, the simulation game should have been:

MUCH MORE DIFFICULT | A LITTLE MORE OF A CHALLENGE | NO DIFFEREMT TO WHAT IT WAS | A LITTLE EASIER | VERY MUCH EASIER

Underline the response with which you agree.

(b) Can you think of anything in particular in the simulation game that you found difficult? YES NO

Comment _____

_____

_____

_____

3 In what way, if any, could the introduction to the game have been improved?

_____

_____

_____

_____

_____

_____

Write on the other side of the paper if you require more space.

4. Please indicate whether time spent on "getting ourselves organised" was: TOO MUCH ABOUT RIGHT TOO LITTLE
Can you suggest in the light of specific instances that tou may recall, how we could have got ourselves organised more quickly?

_____

_____

_____

_____

_____

5. Did you find that problems which arose when the simulation was first experienced, generally speaking, were resolved when the simulation was repeated? YES NO
Please give examples _____

_____

_____

_____

_____

6(a) Were you aware of the object of the exercise - if there was one - when you were participating in the simulation game? YES NO

(b) Are specific objectives in a simulation such as the one you participated in, necessary or important to you? YES NO
Please explain your response _____

_____

_____

_____

_____

_____

7. Was the game explained very clearly before it was played?
YES NO
If "no", what was lacking? Please give specific instances that you can recall: _____

_____

_____

_____

_____

8. The simulation resulted in understanding of price elasticity of demand being:

| VERY CONFUSED | A BIT CONFUSED | NEITHER BETTER NOR WORSE | SOMEWHAT BETTER | VERY MUCH BETTER |
|---|---|---|---|---|

Comment: _____

9. Was there any link, that you were aware of, between the simulation game and the lectures that followed on price elasticity of demand?

Please indicate: YES NO

If you indicated "yes", please specify what this link was. _____

If you answered "no", can you suggest any way in which the simulation could be linked to the lectures on 'price elasticity of demand' so as to make it easier to understand this concept? _____

10. Do you think that the situation that was simulated directly concerns education students training to become specialist business economics teachers? YES NO

Please explain why you chose the response that you did: _____

11. Did you learn anything from the simulation about how quantities demanded relate to prices in the market? YES NO

Comment _____

_____

_____

12. Was it necessary to repeat the simulation? YES NO

In retrospect (i.e. looking back) do you consider the time spent on the simulation was: NOT ENOUGH SUFFICIENT TOO MUCH

If not "sufficient" say why: _____

_____

_____

_____

_____

13. Do you think a different situation should have been simulated? YES NO

If "yes", what do you consider would have been more appropriate?

_____

_____

_____

_____

_____

14. Should the simulation have been done individually and not in groups (firms)? YES NO

Whatever your answer, please say why you answered as you did.

_____

_____

_____

_____

_____

15. Should the park that attracted tourists to the island have played a more influential part in the simulation (other than being just mentioned)? YES NO

If "yes", please explain how this could be done. _____

_____

_____

_____

_____

16. In the repeat of the simulation, should different figures and different demand curves (i.e. the relative elasticities of demand of homeowners and businesses) have been given? YES NO
Please say why you answered as you did: _____

17. Only one student was absent when the posttest was written, whereas at the lectures before and after the simulations and for both simulations, several students did not present themselves. To what do you attribute the better attendance for the posttest?

18. For the simulation to conform closely with reality, should it have made it possible to see exactly how many homeowners would be willing and able to subscribe to the telephone service?
YES NO
Comment: _____

19. Do you think that your experience of the simulation helped you in any way to understand elasticity of demand? YES NO
If "yes", please specify: _____

20. Are you satisfied with this questionnaire YES NO
If you wish to make any comment on question 20, or in respect of any other aspect of the learning programme, please write on the blank pages. Thank you for your help.

TRANSCRIPTION FROM SOUND TAPE OF PERSONAL INTERVIEWS AND A CLASS DISCUSSION RECORDED ON 3 JUNE 1983

Interview with student 13 on receipt of his final questionnaire.

TUTOR: You say here: speaking for yourself, the simulation game should have been a little more of a challenge: 'to find out how the tender had to be filled in - - - after much e x p l a n a t i o n - pause - sorry what is that word? STUDENT: Explanation. TUTOR: Explanation from the people who managed.' O K no comment there. Question 9, was there any link that you were aware of between the simulation game and the lectures that followed, on price elasticity of demand? Please indicate 'yes' or 'no'? I see you haven't actually indicated 'yes' or 'no'. STUDENT: Yes. TUTOR: The answer 's yes? - so you did see? and you were aware of the link? STUDENT nods affirmatively. You say: "I think the link was how prices affect demand. We see how if prices are reduced a greater amount is required - - - and if the prices are increased how it affects demand". Er um O K. I don't think there is anything to add there actualiy. Er question 7: 'Only one student was absent when the post-test was written, whereas at the lectures before and after the simulation, for both simulations (aside to noisy students entering the room: PLEASE NOT SO LOUD) several students did not present themselves'; (to)'what do you ascribe the better attendance for the post-test?' - that was the very last test that we did. Only one person was absent, whereas at the lectures, lots of people were absent. STUDENT: I think er the mere fact that you stressed on the significance of er elasticity, and er helped to fix in (or on) er prices, with when it is reduced an' increased - - -. TUTOR: But why did the people come and write the test when they hadn't attended the lectures - - pause - - do you think? - - - You, you er attended most of them didn't you? STUDENT: Yes, I did attend them. I think er - - TUTOR: I am very puzzled why people come and write a test but they don't come to the lectures - - can you think of any reason for that? You don't know? (In response to negative gesture by the student). - - STUDENT: Well er it was I think the mere fact that you did stress the importance of this whole concept, and er it may be examined. A lot of people they didn't understand the concept at first -- TUTOR: So they came to the test but not to the lectures? STUDENT: Yes.

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