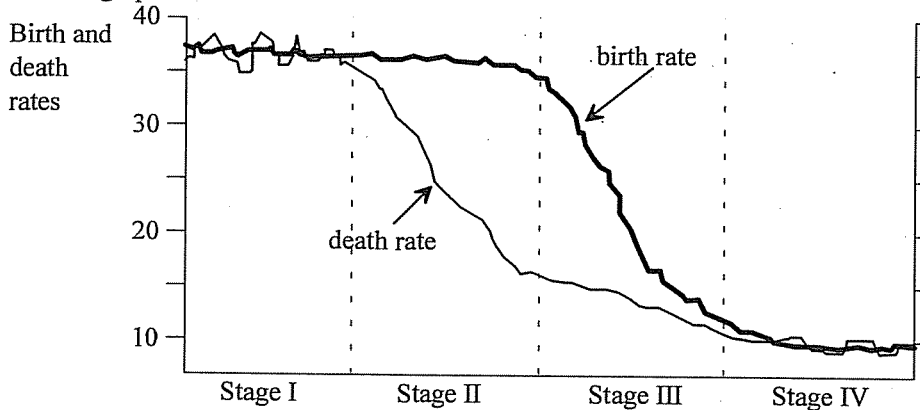


Key

3.1 Practice QUIZ
IB ESS

1. This is a demographic transition model:



The units used for birth rate and death rate in this model are most likely to be

- A. percentage of total population per year.
- B. numbers per square kilometre.
- C. numbers per thousand individuals per year.
- D. total numbers per year.

(Total 1 mark)

2. Fertility rate is

- A. the total number of births minus the total number of deaths in a country.
- B. the number of births per thousand individuals in a population per year.
- C. the number of births per thousand women of child-bearing age per year.
- D. the average number of children a woman has in her lifetime.

(Total 1 mark)

3. The following table shows the human population (10^6) of six countries for the years 1960 and 2000.

	Population (10^6)	
	1960	2000
Australia	10	19
Brazil	72	172
China	650	1273
Nigeria	42	126
United Kingdom	52	59
United States	181	285

[Source: Population Reference Bureau, www.prb.org]

(a) From the data above, determine

- (i) in which country the population has increased by the greatest number.

..... China

(1)

- (ii) the **percentage** of population growth in Nigeria.

..... 300%

(1)

(b) Outline factors that have affected human population growth in **either** Nigeria or China.

Nigeria: ↑ birth rate, medical care & sanitation improvements, infant mortality rate & relatively little use of family planning methods, social factors (young age of marriage), religious beliefs (Islam encourages lg families), children needed to work on land.

or

China: ↑ birth rate, med. care & sanitation improvements, ↓ infant mort. rate, ↓ death rate, recent efforts to control pop. growth (1 child policy), improved access to contraception methods, social factors (ratio male : female / preference for boys : girls)

(3)

- (c) State two factors that may affect the human carrying capacity of a country.
 level of tech (enable resources otherwise unavailable to be used), rate of energy use, materials/goods consumption, amt of imports-exports, standard of living, social + cultural changes, fertility of soil, available resources (2)
- (d) State whether the human population of a city is an open system, a closed system or an isolated system. Explain your answer.

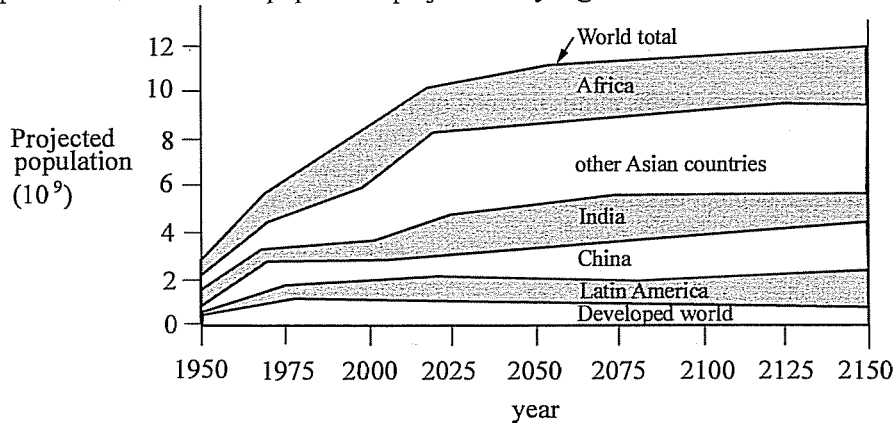
Open; pop of a city has both inputs + outputs, a city has an exchange of matter + energy w/ its surroundings, (examples of inputs + outputs)

(3)

4. What is the definition of crude birth rate?
- A. The total number of births per year.
 - B. The number of births per thousand individuals per year.
 - C. The percentage of births per year in a population.
 - D. The predicted birth rate of a country.

(Total 1 mark)

5. The graph below shows human population projections by region.

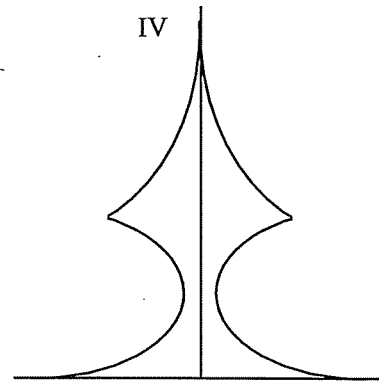
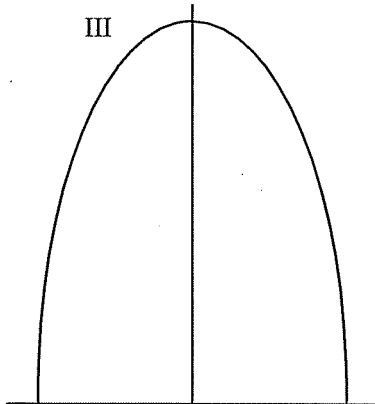
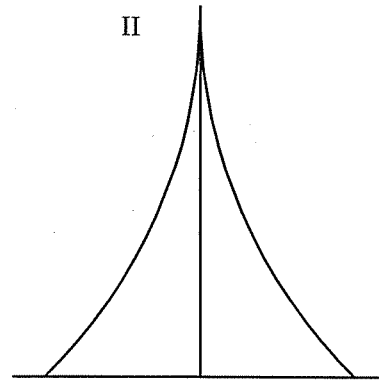
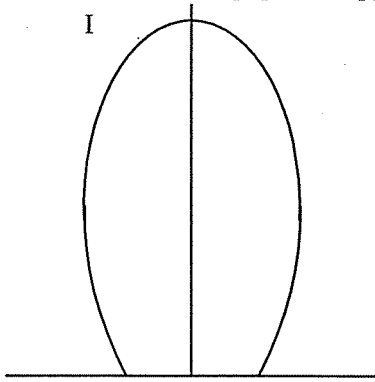


By approximately how many times is the world population in 2125 expected to exceed the population in 1950?

- A. 5
- B. 4
- C. 3
- D. 2

(Total 1 mark)

6. These are models of population pyramids.



The correct labels for axes in population pyramids are

	x-axis	y-axis
A.	age range	percentage of population
B.	population size	survival rate
C.	survival rate	population size
D.	percentage of population	age range

(Total 1 mark)

7. The data below refer to the world population in 1998.

Crude birth rate = 23 per thousand

Crude death rate = 9 per thousand

The Natural Increase Rate was

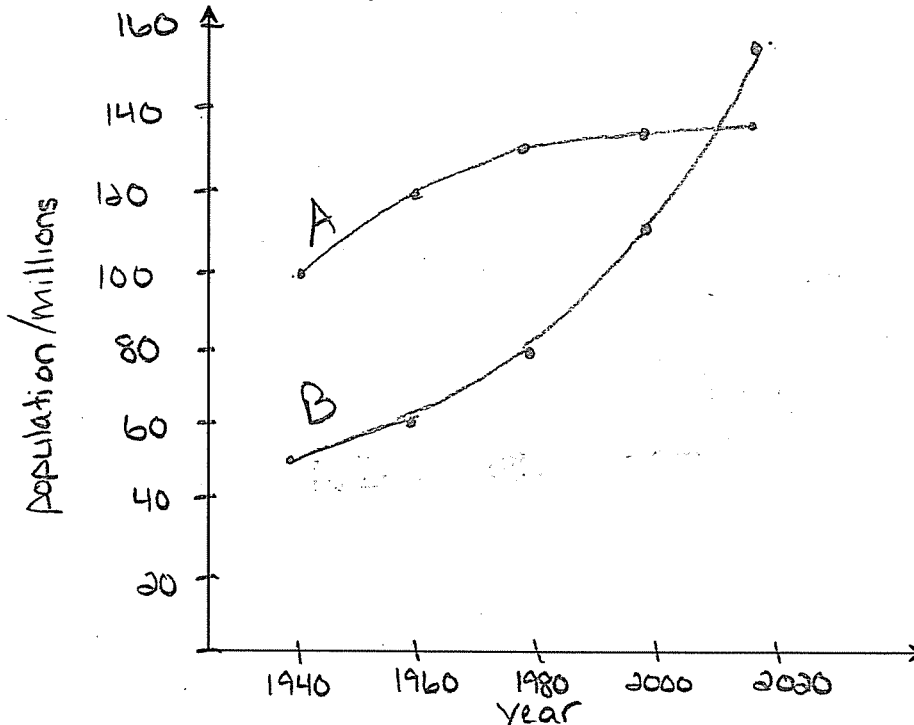
- A.** 1.4.
- B. 14.
- C. $\frac{1.4}{1000}$.
- D. impossible to calculate from these data alone.

(Total 1 mark)

8. The table below gives human population statistics for country A and country B in millions.

Country \ Year	1940	1960	1980	2000	2020
A	100	120	130	135	138
B	50	60	80	110	150

(a) (i) On the axes below, **sketch** the population growth curves for country A and country B, between the years 1940 and 2020.



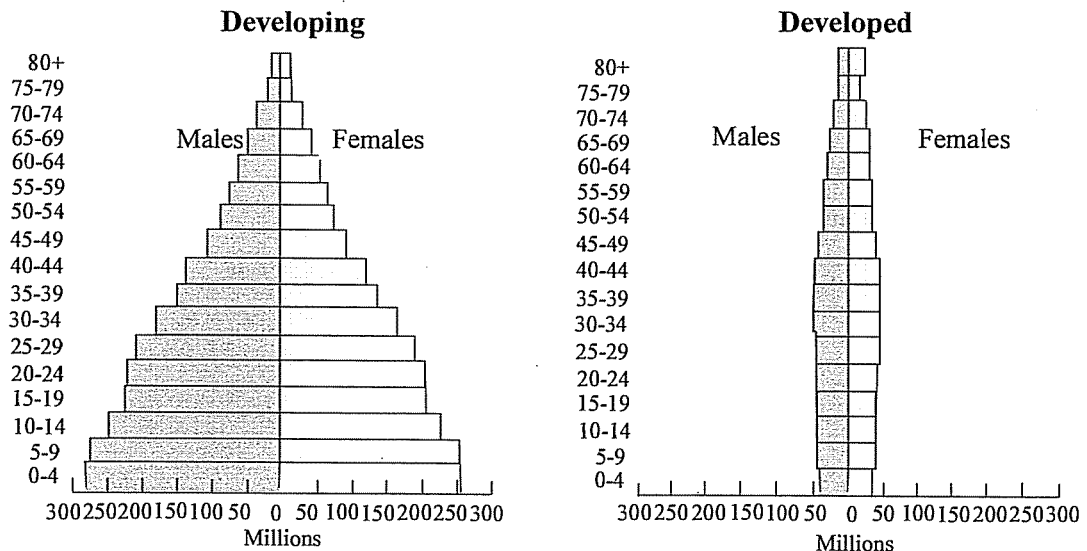
(3)

(ii) Which country, A or B, is most likely to be the **developing** country? Explain your answer.

B - the rate of pop growth is greater / curve gradient steeper / exponential curve

(1)

(b) The age/sex pyramids below show the populations of developed and developing countries in 1998.



(i) Estimate how many people under the age of 15 there are in developing countries and developed countries.

Developing: 1520 mill (accept range 1370-1670 mill)
Developed: 260 mill (accept range 230-290 mill)

(2)

(ii) Why is the number of people under the age of 15 important?

cohorts that will soon become child bearing age / economically active, entering work force

(1)

(iii) Discuss the significance of two differences, other than the number of people under the age of 15, between the two age/sex pyramids above.

Difference	Significance
↑ proportion of people of reprod. age in developing countries Developing countries age/sex pyram. is triangular, developed countries are rectangular.	Pop ↑ will be greatest in developing countries ↑ pressure on resources from rapidly ↑ pop
↑ proportion of people live in middle/old age in developing countries	Better healthcare / living conditions in developed
↑ male than female throughout ages in developing countries, ↓ consistent in developed	Female infanticide may be higher in developing / women die in childbirth (Total 11 marks) more often in developing cs / data may be inaccurate / hard to collect

9. In a demographic transition model

- A. changes in birth rate lag behind changes in death rate.
 B. changes in death rate lag behind changes in birth rate.
 C. birth and death rates change together.
 D. birth rates change in the opposite direction to death rates.

(Total 1 mark)

10. A population has a Natural Increase Rate of 2.0 %. The crude birth and death rates (per thousand) for this population could be

	Crude birth rate	Crude death rate
A.	12	32
<input checked="" type="radio"/> B.	32	12
C.	12	14
D.	14	12

(Total 1 mark)

11. Which of the following has been most effective in reducing growth rates in human populations?

- A. Improved sanitation and disease control
 B. Aid programmes which provide food to countries in famine
 C. Policies which improve agricultural development
 D. Policies which increase the economic independence of women

(Total 1 mark)

12. For a population with a Natural Increase Rate of 2 %, the doubling time in years is

- A. 70.
 B. 35.
 C. 3.5.
 D. 0.7.
- 1% = 70
2% = 35

(Total 1 mark)

13. If in a human population of 10 000, there are 200 births per year and 100 deaths per year, the Natural Increase Rate would be

- A. 0.01.
 B. 0.1.
 C. 1.0.
 D. 10.
- NIR is per 1000 ind. so convert
per 1000 ind 20 births, 10 deaths
so... $\frac{20 - 10}{10} = 1.0 \text{ NIR}$

(Total 1 mark)

14. A population has a crude birth rate of 28 per thousand and a rate of increase of 1.4%. What is the crude death rate per thousand?

- A. 14
B. 26.6
C. 42
D. 29.4

$$NIR\% = \frac{\text{crude birth} - \text{crude death}}{10}$$

$$1.4\% = \frac{28 - x}{10} \quad \text{(solve for x)} \quad -x = 14 - 28 = x = 28 - 14$$

(Total 1 mark) $x = 14$

15. China's average family size has fallen from 5.8 to 2.4 in the last 20 years. Which of the following could have produced this change?

- A. High levels of emigration - this is ignored
B. Increase in the death rate in rural areas
C. Education about contraception methods - makes most sense
D. Genetic changes in the population

(Total 1 mark)

16. A country has a birth rate of 10 per thousand and a death rate of 7 per thousand. Which statement is most likely to be correct?

- A. The population of this developing country is increasing very rapidly.
B. The natural increase rate of this developed country is 0.3%
C. The doubling time for this developed country is about 30 years.
D. This developing country has a natural increase rate of 3.0%.

$$NIR\% = \frac{\text{birth} - \text{death}}{10}$$

$$= \frac{10 - 7}{10}$$

(Total 1 mark)

17. If the crude birth rate of a country is 27 per thousand per year and the crude death rate is 7 per thousand per year, what would the natural increase rate be?

- A. 35%
B. 20%
C. 2%
D. 0.2%

$$NIR\% = \frac{\text{crude birth} - \text{crude death}}{10}$$

$$= \frac{27 - 7}{10} = 2\%$$

(Total 1 mark)

18. Which of the following factors contribute to declining birth rates in a human population?

- I. Greater education opportunities for women ✓
II. Improved access to family planning ✓
III. Improved public health care ✓

- A. I only
B. I and II only
C. II only
D. I, II and III

(Total 1 mark)

19. The data below relate to the world population at a particular time.

Crude birth rate = 35 per thousand

Crude death rate = 20 per thousand

What was the natural increase rate at the time?

- A. 1.5
B. -1.5
C. 15
D. -15

$$NIR\% = \frac{\text{crude birth} - \text{crude death}}{10}$$

$$= \frac{35 - 20}{10} = 1.5$$

(Total 1 mark)

20. Which of the following statements is incorrect?

- A. The decline in fertility rate is mainly due to improvements in family planning and education. ✓
B. Due to improvements in medical care, death rates have declined and life expectancy has increased. ✓
C. Fertility rates in developing countries tend to be low. ✓
D. Throughout history the world population has grown continuously. ✓

(Total 1 mark)

21.

Country	Crude birth rate / thousand	Crude death rate / thousand	Natural increase rate
Angola	46	24	X
Portugal	11	Z	0.1

$$\frac{46-24}{10}$$

Which row in the table below correctly gives the values of X and Z?

	X	Z
A.	22	10.9
<input checked="" type="radio"/> B.	2.2	10
C.	70	-10.9
D.	-22	11.1

$$\frac{11-x}{10} = 0.1$$

$$(10) \frac{11-x}{10} = 0.1 \times 10$$

(Total 1 mark)

$$11-x = 1.0$$

$$-x = 1 - 11$$

$$x = 11 - 1$$

$$x = 10$$