

## READING PASSAGE 3

You should spend about 20 minutes on **Questions 27-40**, which are based on Reading Passage 3 below.

### Mercator - The Map Maker

*Maps codify the miracle of existence. And the man who wrote the codes for the maps we use today was Gerard Mercator, a cobbler's son born 500 years ago on a muddy floodplain in northern Europe.*

Mercator was a humble man with a universal vision. In his own time he was 'the prince of modern geographers', his depictions of the planet and its regions unsurpassed in accuracy, clarity and consistency. More recently, he was crowned by the American scholar Robert W. Karrow as 'the first modern, scientific cartographer'. Where his predecessors had adopted a piecemeal approach to cartography, Mercator sought to wrap the world in systematic overlapping maps. Along the way he erected a number of historic milestones. He participated in the naming and mapping of 'America', he constructed the two most important globes of the 16th century, and the title of his pioneering 'modern geography', the Atlas, became the standard term for a volume of maps. Mercator also devised a new method - 'a projection' - of converting the spherical world into a two-dimensional map.

Mercator was born in 1512 and died in 1594. His world was one of military conflict, social upheaval, religious revolution - and geographical discovery. He was ten years old when the survivors of the world's first circumnavigation returned to Spain in their leaking caravel. No better example is required of genius arising from turmoil. He knew poverty, plague, war and persecution. He was imprisoned for his ideas yet patronised by an emperor. His life was one of brilliant breakthroughs and abrupt reversals. In its telling, this is the story of the poor boy made good: the pauper who embraced the world, found fame, faced death, yet triumphed through fortitude. Various descriptions by his peers as honest, calm, candid, sincere and peaceable, Mercator wore an aura of calm in troubled times. His attitude to his geographical calling was described by his friend and neighbour, William Ghim, as 'indefatigable'. Some 40 or so of Mercator's letters have survived, together with examples of virtually all of his printed maps and globes.

Mercator's most significant work was a project of cosmic proportions. A multi-part cosmography, the work would include a section on astronomy, a chronology of world events and a modern geography, which would eventually contain over 100 maps.

Before he commenced the great work, Mercator produced in 1569 an enormous world map on a new projection. His method for converting the spherical globe into a two-dimensional map helped to solve the greatest cartographic riddle of the day: how could the course of a ship following a constant compass bearing be represented as a straight line on a map which had been constructed on a grid of latitude and longitude?

Mercator's solution was to progressively increase the space between his lines of latitude, away from the equator. The effect was to straighten the lines of constant compass bearing (also known as rhumbs or loxodromes). Unfortunately, straightening the rhumbs caused *areal*\* distortion: at the map's northern and southern extremities, the polar regions occupied the full width of the map, while North America appeared to fill half the circumference of the world.

Few of Mercator's contemporaries understood what he was up to, despite the map's title explaining that it was intended 'for use in navigation'. Mercator knew that his projection was unsuitable as an areal description of the world, but it would be several decades before the map's true navigational value would be recognised.

Meanwhile, Mercator was marshalling and editing all the geographical data he needed for his modern regional maps of the world. His sources were wide-ranging and multitudinous, including an imperial physician in Vienna and his competitor, the Viceroy of Holstein. He was still working on these maps when he died. The great cosmography that Mercator had already titled 'Atlas' would never be finished.

In the Atlas, Mercator had embodied the principles of future mapmaking: his italic lettering, his identical map overlaps, his complete coverage of regions at more than one scale, his consistent use of grids of latitude and longitude, his singular editorial control, were all adopted as cartographic standards. 'Atlas', the cosmography, became 'atlas', the (Oxford English Dictionary) term for 'a collection of maps in a volume.'

The projection assumed a life of its own. So powerful a cartographic tool did it become that Mercator the man became subsumed by his own device. By the 20th century, Mercator's Projection had been adopted by state cartographers to map the land that he had named 'North America'. In 1938, Mercator's Projection was selected by the Ordnance Survey to map Britain anew. And in 1974, the American cartographer Alden P. Colvocoresses used the Space Oblique Mercator Projection for the first satellite map of the USA. When the Jet Propulsion Laboratory sent Mariner 8 and Mariner 9 to map Mars, they undertook their Martian cartography on a standard Mercator Projection. One by one, the mappable orbs of our solar system are appearing on the worldwide web, flattened for our screens according to Mercator's cartographic principles.

Mercator's Projection succeeded in reconciling the sphere and the plane, while his Atlas enveloped the world with an integrated system of maps.

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\**areal*: of an area

Questions 27-34

Do the following statements agree with the information given in Reading Passage 3?

In boxes 27-34 on your answer sheet, write:

<b>TRUE</b>	<i>if the statement agrees with the information</i>
<b>FALSE</b>	<i>if the statement contradicts the information</i>
<b>NOT GIVEN</b>	<i>if there is no information on this</i>

- 27 Cartographers before Mercator had tended to produce separate, individual maps.
- 28 Mercator was critical of the work of his contemporaries.
- 29 During his life, Mercator experienced great changes of fortune.
- 30 Most of Mercator's published work remains intact today.
- 31 Mercator started work on his projection shortly after embarking on his cosmography.
- 32 Mercator's Projection was immediately seen as a major breakthrough.
- 33 Mercator produced an accurate areal description of the world.
- 34 Mercator consulted the work of various people when producing his maps.

### Questions 35-40

Complete the notes below.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.

Write your answers in boxes 35-40 on your answer sheet.

#### **Mercator's Projection:**

- His attempt to represent the globe as a **35** \_\_\_\_\_ map

#### **Problem:**

- When sailors used a map based on lines of latitude and longitude and kept to a constant compass bearing, the course of the ship could not be shown as a **36** \_\_\_\_\_ on a map

#### **Solution:**

- To increase the space separating the lines of latitude, the further they are from the equator

#### **Result:**

- When Mercator straightened the 'rhumbs' as intended, this produced **37** \_\_\_\_\_ at the northern and southern extremities, with the full width of the map being taken up by the **38** \_\_\_\_\_

#### **Original intention:**

- Mercator originally designed the map for **39** \_\_\_\_\_ purposes

#### **Uses of Mercator's Projection up to the present day:**

- Various uses including the mapping of **40** \_\_\_\_\_ by state cartographers
- Also used to portray planets in our solar system on the web

判断题 (27–34)

题号	答案	中文题干	精确定位句 (第 X 段)	定位句翻译	详细解释 (同义改写 / 排除)
27	TRUE	在麦卡托之前, 制图师倾向于绘制彼此独立的单张地图。	“Where his predecessors had adopted a piecemeal approach to cartography, Mercator sought to wrap the world in systematic overlapping maps.” (第 2 段)	他的前辈采用的是零碎式 (逐件拼凑) 的制图方法, 而麦卡托试图用系统化、彼此重叠的地图把整个世界都包起来。	“piecemeal approach”=零碎 / 单张、各自为政; 与题干的 “separate, individual maps (独立的单张地图)” 同义。故为 TRUE。
28	NOT GIVEN	麦卡托批评过他同时代人的工作。	通篇未出现他对同时代人的负面评价。	—	文中多为称赞、成就与方法描述, 无 “critical of his contemporaries” 之证据; 不能从他 “改进前人做法” 推导为 “批评”。信息缺失 → NOT GIVEN。
29	TRUE	麦卡托一生经历了巨大命运起伏。	“His life was one of brilliant breakthroughs and abrupt reversals.” (第 3 段)	他的一生既有辉煌的突破, 也有突如其来 的逆转。	“great changes of fortune” 与 “abrupt reversals” 同义; 同时段还写到贫困 / 瘟疫 / 坐牢 / 受皇帝资助等强烈反差, 进一步印证。
30	TRUE	麦卡托的大多数出版物今天仍保存完好。	“Some 40 or so of Mercator’s letters have survived, together with examples of virtually all of his printed maps and globes.” (第 3 段)	大约四十封信保存至今, 几乎所有他印刷的地图与地球仪都有存世实例。	“examples of virtually all”=几乎全部都有存世样本 → 可合理等同于 “多数作品仍完好 / 保存至今”。故为 TRUE。
31	FALSE	麦卡托在着手其宇宙志 (cosmography) 后不久就开始研究投影。	“Before he commenced the great work, Mercator produced in 1569 an enormous world map on a new projection.” (第 5 段)	在他开始那部伟大著作之前, 他于 1569 年就用新投影制成了巨幅世界地图。	题干说 “着手之后不久”, 原文为 “之前”, 与题意相反, 故 FALSE。
32	FALSE	麦卡托投影一出世就被视为重大突破。	“...but it would be several decades before the map’s true navigational value would be recognised.” (第 6 段)	过了几十年之后, 人们才认识到该地图的真正航海价值。	“immediately” 与 “several decades before... recognised” 相矛盾 → FALSE。
33	FALSE	麦卡托提供了世界的精确面积描绘。	“Mercator knew that his projection was unsuitable as an areal description of the world...” (第 6 段)	麦卡托知道他的投影不适合作为世界的面积 (areal) 描述。	原文明确否定其 “areal (面积 / 面积分布) 准确性”, 故 FALSE。
34	TRUE	麦卡托在制图时参考了多位人士的资料。	“His sources were wide-ranging and multitudinous, including an imperial physician in Vienna and his competitor, the Viceroy of Holstein.” (第 7 段)	他的资料来源广泛且数量众多, 包括维也纳的御医以及他的竞争者、荷尔斯泰因总督。	“consulted the work of various people” 与 “sources... wide-ranging and multitudinous... including ... and ...” 对应, 明确为 TRUE。

笔记填空 (35–40)

(每空不超过两个词; 按原文用词)

题号	答案	中文题干	精确定位句 (第 X 段)	定位句翻译	解释
35	two-dimensional	他试图将地球表示为一张 _____ 地图。	“Mercator also devised... converting the spherical world into a two-dimensional map.” (第 2 段; 第 5 段同义复现)	将球形世界转换为二维地图。	直接原词, 符合 “represent the globe as a ... map”。(连字符词在 IELTS 计作一个词, 亦满足 ≤2 词要求。)
36	straight line	... 船舶在保持恒定罗盘方位时, 其航线无法在地图上显示为 _____。	“how could the course of a ship... be represented as a straight line on a map...?” (第 5 段)	船的航线怎么能在地图上表示为一条直线?	题干即原句改写; 故填 straight line。
37	areal distortion	将恒向线 (rhumbs) 拉直会在南北两端产生 _____。	“Unfortunately, straightening the rhumbs caused areal distortion” ...” (第 6 段)	不幸的是, 将恒向线拉直会造成面积失真。	按原文填复合名词 “areal distortion”。
38	polar regions	.....地图的整个上、下边宽度被 _____ 占据。	“...at the map’s northern and southern extremities, the polar regions occupied the full width of the map...” (第 6 段)	在地图的北端与南端, 极地区域占据了地图的全部宽度。	“full width of the map being taken up by...” = “occupied the full width”, 对应极地。
39	navigation	麦卡托最初是为 _____ 目的设计该地图。	“...title explaining that it was intended ‘for use in navigation’.” (第 6 段)	标题说明该图是 “用于航海”。	名词形式与题干搭配自然。
40	North America	近现代用途之一: 由国家制图机构绘制 _____。	“By the 20th century... adopted by state cartographers to map the land that he had named ‘North America’.” (第 10 段)	到 20 世纪, 国家制图机构采用它来绘制他命名为 “北美” 的土地。	题干 “mapping of ____ by state cartographers” 与原句完全同构。

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