

Historical Origins of Colors and Shapes

Colors And Shapes · Answer Key · 18 Questions

1. Which pigment, discovered in 1704 by Johann Jacob Diesbach, became the first synthetically produced modern color?

- A) Prussian Blue**
- B) Gamboge Yellow
- C) Tyrian Purple
- D) Vermilion

2. In Euclidean geometry, what is the specific name for a polygon with 17 sides, a shape famously proven constructible by Carl Friedrich Gauss in 1796?

- A) Heptadecagon**
- B) Enneadecagon
- C) Octadecagon
- D) Pentadecagon

3. Which mineral was historically mined to produce the vibrant pigment known as 'Egyptian Blue', the first synthetic pigment created by humans?

- A) Calcium copper silicate**
- B) Cinnabar
- C) Lapis Lazuli
- D) Malachite

4. What shape was formally adopted as the international standard for 'Stop' signs by the Vienna Convention on Road Signs and Signals in 1968?

- A) Octagon**
- B) Circle
- C) Triangle
- D) Square

5. The color 'Vantablack', composed of vertically aligned carbon nanotube arrays, was developed in 2014 to absorb what percentage of visible light?

- A) 99.965%**
- B) 95.2%
- C) 92.5%
- D) 88.8%

6. Which historical figure identified the seven colors of the visible spectrum (ROYGBIV) to align with the seven musical notes of the diatonic scale?

A) Isaac Newton

B) Johannes Kepler

C) Galileo Galilei

D) Robert Boyle

7. Before the discovery of synthetic dyes, the expensive purple pigment 'Tyrian purple' was extracted from the mucus of which marine organism?

A) Sea snails (Murex)

B) Squid ink

C) Red coral

D) Starfish

8. What is the term for a shape with constant width, famously studied by Leonhard Euler, that is not a circle?

A) Reuleaux triangle

B) Spherical polygon

C) Hyperbolic disc

D) Convex hull

9. The pigment 'Scheele's Green', popular in the 18th century, was found to be highly toxic due to its high content of which element?

A) Arsenic

B) Lead

C) Mercury

D) Cadmium

10. In the history of flag design, which country was the first to adopt a rectangular flag with three horizontal colored stripes (a tricolour)?

A) Netherlands

B) France

C) Italy

D) Belgium

11. What mathematical constant, denoted by the Greek letter π , is essential for calculating the area of a circle and was historically approximated by Archimedes?

A) Ratio of circumference to diameter

B) Ratio of area to radius

C) Ratio of volume to surface

D) Ratio of diagonal to side

12. The 'Golden Rectangle', historically utilized in the Parthenon, is defined by a ratio of sides equal to what?

A) The Golden Ratio (phi)

B) The Square root of 2

C) The ratio of 3:4

D) The ratio of 1:1

13. Which synthetic red pigment, created in 1868, replaced the traditional madder root extract, fundamentally changing the textile industry?

A) Alizarin Crimson

B) Cadmium Red

C) Cinnabar

D) Iron Oxide

14. Historically, the 'pentagram' was used as a symbol of health and mathematical perfection by followers of which ancient philosopher?

A) Pythagoras

B) Plato

C) Socrates

D) Aristotle

15. What is the geometric name for the shape of the Sydney Opera House's 'sails', which are segments of the same sphere?

A) Spherical triangles

B) Paraboloids

C) Hyperboloids

D) Catenoids

16. The color 'Gamboge', a deep saffron yellow, was historically imported to Europe from which region?

A) Southeast Asia

B) The Americas

C) North Africa

D) Scandinavia

17. Which 19th-century chemist invented the first synthetic aniline dye, 'Mauveine', in 1856 while attempting to create an antimalarial drug?

A) William Henry Perkin

B) Louis Pasteur

C) August Kekulé

D) Dmitri Mendeleev

18. What is the name of the geometric solid formed by joining 20 equilateral triangles, which Plato associated with the element of water?

- A) Icosahedron**
- B) Dodecahedron
- C) Tetrahedron
- D) Octahedron