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| Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Date: \_\_\_\_\_\_\_\_\_ | Period: \_\_\_\_\_\_\_ |

Refraction and Lenses

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|  |  |  |  |  |  |  |  |  |  | 2  C |  |  |  |  |  |  |  |  | O |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  | 3  P | O | S | I | T | I | V | E | M | E | N | I | S | C | U | S |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  | N |  |  |  |  |  |  |  |  | T |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  | V |  |  |  |  |  |  |  |  | A |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  | E |  |  |  |  |  |  | 4  O |  | C |  |  |  |  |  |  |  | 5  I |  |  |
|  |  |  | 6  B |  |  |  |  | 7  V |  | R |  |  |  |  |  |  | B |  | T |  | 8  F |  |  |  |  |  | M |  |  |
|  |  | 9  D | I | V | E | R | G | I | N | G | L | E | N | S |  |  | J |  | L |  | O |  |  |  | 10  P |  | A |  |  |
|  |  |  | C |  |  |  |  | R |  | I |  |  |  |  |  |  | E |  | E |  | C |  | 11  R |  | L |  | G |  |  |
|  |  |  | O |  |  |  |  | T |  | N |  | 12  P | L | A | N | O | C | O | N | C | A | V | E |  | A |  | E |  |  |
|  |  |  | N |  |  |  |  | U |  | G |  |  |  |  |  |  | T |  | S |  | L |  | A |  | N |  | D |  |  |
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|  |  |  | E |  |  |  |  | L |  | E |  | 13  N | E | G | A | T | I | V | E | M | E | N | I | S | C | U | S |  |  |
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|  |  |  |  |  |  |  |  | M |  | S |  |  |  |  |  |  | T |  | 14  C |  | G |  | A |  | N |  | A |  |  |
|  |  |  |  |  |  |  |  | A |  |  |  |  |  |  | 15  P | L | A | N | O |  | T |  | G |  | V |  | N |  |  |
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|  |  |  |  |  |  |  |  | E |  |  |  | 16  B | I | 17  C | O | N | C | A | V | E |  |  |  |  | X |  | E |  |  |
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|  |  | 18  M | A | G | N | I | F | Y | I | N | G | L | E | N | S |  |  |  | X |  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  | 19  F | O | C | A | L | P | O | I | N | T |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |  |  | 20  M | E | N | I | S | C | U | S |  |  |  |  |  |  |  |  |  |

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| **Across**  **3.** “Fisheye” used in photography for a curve look; is thicker at the center than at the edges.  **9.** a lens that causes a beam of parallel rays to diverge after refraction, as from a virtual image  **12.** pertaining to or nothing a lens that is plane on one side and concave on the other.  **13.** common element in beam expanding applications; consist of a convex surface and a concave surface where the concave surface.  **15.** pertaining to eyeglasses that do not contain a curvature for correcting vision, such as sunglasses.  **16.** concave on both sides  **18.** microscopes are an example of this; convex lens that is used to produce a magnified image of an object  **19.** A "perfect" lens or mirror would send all light rays through one \_\_\_\_\_\_ which would result in the clearest image; the center of interest or activity.  **20.** A lens with one convex and one concave side is convex-concave. | **Down**  **1.** a thin plastic lens placed directly on the surface of the eye to correct visual defect  **2.** used in a refracting telescope to focus the image  **4.** the distance from the actual object being reflected to the point of incidence on the mirror where it's reflected as an image.  **5.** the distance from the point of incidence on the mirror, the where the image is reflected to.  **6.** Lenses can be used to focus light; convex on both sides  **7.** formed by diverging lenses or by placing an object inside the focal length of a converging lens  **8.** The light enters the lens and it bends as it goes through the lens to cross at a point in front of the lens.  **10.** lenses are used in imaging, lasers and fiber optics; being flat on one side, and convex on the other  **11.** movies presented are an example; light actually converges  **14.** refracting telescope uses two (of these lenses) to magnify images in the sky; surface curved like the exterior of a circle or sphere.  **17.** including in eyeglasses; curving inward. |