

# PRACTICE EXAM 4: CCAT SIMULATION

## — 170 QUESTIONS

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### VERBAL BATTERY (Questions 1–57)

#### Verbal Analogies (Questions 1–19)

1. Big is to large as small is to \_\_\_\_

- A. tiny
- B. huge
- C. medium
- D. heavy

2. Up is to down as left is to \_\_\_\_

- A. away
- B. right
- C. side
- D. centre

3. Brush is to painter as needle is to \_\_\_\_

- A. cloth
- B. button
- C. thread
- D. tailor

4. Seed is to plant as caterpillar is to \_\_\_\_

- A. cocoon
- B. leaf
- C. butterfly
- D. wing

5. Spoke is to wheel as branch is to \_\_\_\_

- A. tree
- B. leaf
- C. wood
- D. forest

6. Pencil is to write as scissors is to \_\_\_\_

- A. paper
- B. sharp
- C. cut
- D. tool

7. Morning is to breakfast as evening is to \_\_\_\_

- A. afternoon
- B. dinner
- C. sleep
- D. moon

8. Bottle is to water as jar is to \_\_\_\_

- A. lid
- B. round
- C. glass
- D. jam

9. Clay is to pottery as flour is to \_\_\_\_

- A. white
- B. bread
- C. baker
- D. mixer

10. Spider is to web as rabbit is to \_\_\_\_

- A. burrow
- B. carrot
- C. fur
- D. hop

11. Knife is to cut as ruler is to \_\_\_\_

- A. wood
- B. straight
- C. measure
- D. number

12. Tall is to short as wide is to \_\_\_\_

- A. narrow
- B. high
- C. long
- D. flat

13. Penguin is to ice as monkey is to \_\_\_\_

- A. banana
- B. tail
- C. tree
- D. jump

14. Sunrise is to morning as sunset is to \_\_\_\_

- A. evening
- B. star
- C. dark
- D. moon

15. Sun is to day as moon is to \_\_\_\_

- A. round
- B. night
- C. dark
- D. cold

16. Author is to novel as composer is to \_\_\_\_

- A. piano
- B. orchestra
- C. note
- D. symphony

17. Eyes are to see as ears are to \_\_\_\_

- A. listen
- B. music
- C. hear
- D. sound

18. Tennis is to racket as golf is to \_\_\_\_

- A. ball
- B. club
- C. green
- D. hole

19. Day is to week as month is to \_\_\_\_

- A. minute
- B. hour
- C. year
- D. calendar

**Sentence Completion (Questions 20–38)**

20. The brilliant scientist worked late into the night because she wanted to \_\_\_ her experiment before the morning deadline arrived.

- A. forget
- B. finish
- C. ignore
- D. start

21. Although the path through the forest looked overgrown and unfamiliar, Theo followed it \_\_\_ because he trusted his memory of the route.

- A. quickly
- B. loudly
- C. lazily
- D. confidently

22. The newborn calf wobbled on its thin legs at first but soon learned to walk \_\_\_ across the meadow without falling.

- A. backward
- B. softly
- C. steadily
- D. quickly

23. The detective examined every piece of evidence \_\_\_ because even the smallest clue might be the one that solved the mystery.

- A. quickly

- B. carefully
- C. happily
- D. accidentally

24. Even after losing the championship game by a single goal, the team felt \_\_\_\_ that they had played their very best against a strong opponent.

- A. angry
- B. embarrassed
- C. proud
- D. lonely

25. The hikers reached the summit just as the sun was setting, creating a sky so \_\_\_\_ that no one could stop staring at the horizon.

- A. cloudy
- B. dim
- C. plain
- D. beautiful

26. Because the new puzzle had over a thousand tiny pieces, Lila worked on it \_\_\_\_ for several weeks before finally finishing the last corner.

- A. once
- B. quickly
- C. patiently
- D. roughly

27. The librarian asked the students to speak \_\_\_\_ so that other readers could focus on their books without distraction.

- A. quietly
- B. loudly
- C. quickly
- D. firmly

28. Although the rainstorm had soaked the picnic blanket, the family laughed about it and \_\_\_ a dry spot under a tall oak tree.

- A. ignored
- B. dropped
- C. found
- D. lost

29. After a long day of running errands all over town, Mum sat on the porch and \_\_\_ her tea while watching the sunset.

- A. spilled
- B. sipped
- C. ate
- D. cooked

30. The teacher's instructions for the science project were so \_\_\_ that every student understood exactly what to do on the very first try.

- A. clear
- B. confusing
- C. quiet
- D. quick

31. Because the marathon route was over twenty kilometres long, every runner had to train \_\_\_ for many months in advance of race day.

- A. lazily
- B. quickly
- C. seriously
- D. easily

32. The new bookshelf was so \_\_\_ that the family could fit every novel, magazine, and encyclopedia they owned with room left over.

- A. spacious
- B. narrow
- C. small
- D. tilted

33. After hearing the funny joke about the talking parrot, James could not stop \_\_\_ for nearly a full minute.

- A. crying
- B. yawning
- C. laughing
- D. running

34. The mountain trail became so \_\_\_ near the top that the climbers had to use ropes for the final dangerous section.

- A. easy
- B. steep

- C. wet
- D. crowded

35. Because the soup needed extra spice to taste right, the chef sprinkled a \_\_\_\_ of black pepper into the simmering pot.

- A. spoonful
- B. handful
- C. pinch
- D. cup

36. Even though the cat looked sleepy on the windowsill all afternoon, she \_\_\_\_ to her feet the instant the can opener clicked.

- A. fell
- B. jumped
- C. crawled
- D. walked

37. Because the wind was blowing so strongly across the field, the kite flew higher and higher until it was almost \_\_\_\_ to see from the ground below.

- A. easy
- B. close
- C. simple
- D. impossible

38. After working in the garden under the hot sun for two hours, Grandpa felt \_\_\_\_ and sat down on the bench for a long break.

- A. excited
- B. tired
- C. happy
- D. proud

**Verbal Classification (Questions 39–57)**

39. diamond, ruby, emerald

- A. metal
- B. crown
- C. sapphire
- D. shine

40. violin, guitar, harp

- A. drum
- B. flute
- C. trumpet
- D. cello

41. snake, lizard, turtle

- A. frog
- B. fish
- C. crocodile
- D. salamander

42. oak, maple, willow

- A. elm
- B. pine
- C. bush
- D. fern

43. north, south, east

- A. up
- B. left
- C. centre
- D. west

44. Mars, Jupiter, Saturn

- A. moon
- B. Venus
- C. asteroid
- D. comet

45. butterfly, bee, moth

- A. spider
- B. worm
- C. dragonfly
- D. snail

46. shovel, rake, hoe

- A. drill
- B. trowel
- C. saw
- D. wrench

47. happy, joyful, glad

- A. cheerful
- B. angry
- C. tired
- D. quiet

48. square, rectangle, triangle

- A. cube
- B. sphere
- C. pentagon
- D. cylinder

49. basketball, football, baseball

- A. soccer
- B. running
- C. swimming
- D. chess

50. chair, bench, stool

A. table

B. lamp

C. sofa

D. desk

51. lion, tiger, leopard

A. mouse

B. dog

C. fox

D. cheetah

52. book, magazine, newspaper

A. pen

B. shelf

C. journal

D. paper

53. London, Paris, Tokyo

A. ocean

B. river

C. country

D. Berlin

54. piano, drums, guitar

- A. song
- B. note
- C. trumpet
- D. concert

55. swimming, diving, surfing

- A. sailing
- B. running
- C. skating
- D. skiing

56. morning, afternoon, evening

- A. clock
- B. sun
- C. day
- D. night

57. singer, dancer, actor

- A. musician
- B. teacher
- C. doctor
- D. farmer

**QUANTITATIVE BATTERY (Questions 58–114)**

**Number Analogies (Questions 58–76)**

58.  $[2 \rightarrow 20] [3 \rightarrow 30] [4 \rightarrow ?]$

- A. 36
- B. 38
- C. 40
- D. 44

59.  $[14 \rightarrow 2] [21 \rightarrow 3] [35 \rightarrow ?]$

- A. 6
- B. 5
- C. 4
- D. 7

60.  $[2 \rightarrow 22] [3 \rightarrow 33] [4 \rightarrow ?]$

- A. 40
- B. 42
- C. 44
- D. 48

61.  $[1 \rightarrow 12] [2 \rightarrow 24] [3 \rightarrow ?]$

- A. 30

- B. 32
- C. 34
- D. 36

62.  $[1 \rightarrow 7] [2 \rightarrow 9] [3 \rightarrow ?]$

- A. 10
- B. 11
- C. 12
- D. 13

63.  $[1 \rightarrow 8] [2 \rightarrow 11] [3 \rightarrow ?]$

- A. 14
- B. 13
- C. 15
- D. 12

64.  $[3 \rightarrow 3] [4 \rightarrow 5] [5 \rightarrow ?]$

- A. 8
- B. 6
- C. 7
- D. 9

65.  $[2 \rightarrow 4] [3 \rightarrow 7] [4 \rightarrow ?]$

- A. 11

- B. 10
- C. 9
- D. 12

66.  $[1 \rightarrow 1] [2 \rightarrow 8] [3 \rightarrow ?]$

- A. 27
- B. 24
- C. 30
- D. 21

67.  $[1 \rightarrow 6] [2 \rightarrow 10] [3 \rightarrow ?]$

- A. 12
- B. 14
- C. 16
- D. 18

68.  $[1 \rightarrow 4] [2 \rightarrow 9] [3 \rightarrow ?]$

- A. 11
- B. 12
- C. 13
- D. 14

69.  $[1 \rightarrow 6] [2 \rightarrow 11] [3 \rightarrow ?]$

- A. 14

- B. 15
- C. 16
- D. 17

70.  $[1 \rightarrow 6] [2 \rightarrow 8] [3 \rightarrow ?]$

- A. 10
- B. 11
- C. 12
- D. 9

71.  $[3 \rightarrow 30] [4 \rightarrow 40] [5 \rightarrow ?]$

- A. 45
- B. 48
- C. 50
- D. 55

72.  $[2 \rightarrow 12] [3 \rightarrow 18] [5 \rightarrow ?]$

- A. 30
- B. 28
- C. 32
- D. 36

73.  $[1 \rightarrow 7] [2 \rightarrow 10] [3 \rightarrow ?]$

- A. 11

- B. 10
- C. 12
- D. 13

74.  $[18 \rightarrow 2] [27 \rightarrow 3] [45 \rightarrow ?]$

- A. 5
- B. 6
- C. 4
- D. 7

75.  $[1 \rightarrow 11] [2 \rightarrow 22] [3 \rightarrow ?]$

- A. 30
- B. 33
- C. 36
- D. 39

76.  $[1 \rightarrow 7] [2 \rightarrow 11] [3 \rightarrow ?]$

- A. 13
- B. 12
- C. 14
- D. 15

**Number Puzzles (Questions 77–95)**

77.  $? + 18 = 33$

- A. 15
- B. 16
- C. 14
- D. 17

78.  $9 \times ? = 63$

- A. 6
- B. 8
- C. 9
- D. 7

79.  $? - 14 = 12$

- A. 26
- B. 24
- C. 28
- D. 22

80.  $48 \div ? = 8$

- A. 8
- B. 12
- C. 4
- D. 6

81.  $7 \times ? = 42$

- A. 4
- B. 5
- C. 6
- D. 7

82.  $? + 25 = 42$

- A. 17
- B. 18
- C. 19
- D. 16

83.  $90 - ? = 37$

- A. 47
- B. 50
- C. 53
- D. 57

84.  $? \times 11 = 66$

- A. 5
- B. 6
- C. 7
- D. 8

85.  $15 + ? + 8 = 35$

- A. 10
- B. 11
- C. 14
- D. 12

86.  $? \div 6 = 9$

- A. 54
- B. 60
- C. 48
- D. 45

87.  $9 \times ? + 5 = 50$

- A. 4
- B. 6
- C. 7
- D. 5

88.  $? + 34 = 50$

- A. 16
- B. 17
- C. 18
- D. 15

89.  $84 \div ? = 12$

- A. 6
- B. 7
- C. 8
- D. 9

90.  $? - 19 = 11$

- A. 30
- B. 28
- C. 32
- D. 24

91.  $12 \times ? = 60$

- A. 6
- B. 4
- C. 7
- D. 5

92.  $? + 38 = 70$

- A. 30
- B. 32
- C. 34
- D. 28

93.  $64 \div ? = 8$

- A. 8
- B. 9
- C. 6
- D. 7

94.  $11 \times ? + 3 = 47$

- A. 5
- B. 6
- C. 4
- D. 3

95.  $? - 22 = 15$

- A. 35
- B. 37
- C. 39
- D. 33

**Number Series (Questions 96–114)**

96. 6, 15, 24, 33, \_\_\_\_

- A. 38
- B. 40
- C. 44
- D. 42

97. 70, 63, 56, 49, \_\_\_\_

A. 42

B. 40

C. 45

D. 47

98. 2, 6, 18, 54, \_\_\_\_

A. 100

B. 120

C. 162

D. 180

99. 8, 18, 28, 38, \_\_\_\_

A. 44

B. 48

C. 46

D. 50

100. 1, 8, 27, 64, \_\_\_\_

A. 100

B. 81

C. 144

D. 125

101. 120, 108, 96, 84, \_\_\_\_

A. 78

B. 74

C. 72

D. 76

102. 1, 3, 6, 10, 15, \_\_\_\_

A. 21

B. 18

C. 19

D. 25

103. 2, 9, 4, 8, 6, 7, \_\_\_\_

A. 7

B. 8

C. 9

D. 6

104. 3, 5, 9, 15, 23, \_\_\_\_

A. 27

B. 30

C. 28

D. 33

105. 7, 20, 33, 46, \_\_\_\_

A. 55

B. 56

C. 59

D. 62

106. 128, 64, 32, 16, \_\_\_\_

A. 4

B. 12

C. 10

D. 8

107. 10, 25, 40, 55, \_\_\_\_

A. 70

B. 65

C. 75

D. 80

108. 1, 3, 7, 15, 31, \_\_\_\_

A. 47

B. 60

C. 63

D. 55

109. 1, 4, 5, 9, 14, \_\_\_\_

A. 23

B. 19

C. 18

D. 20

110. 1, 10, 2, 9, 3, 8, \_\_\_\_

A. 5

B. 4

C. 7

D. 6

111. 80, 72, 64, 56, \_\_\_\_

A. 48

B. 50

C. 46

D. 52

112. 2, 4, 8, 16, 32, \_\_\_\_

A. 48

B. 56

C. 64

D. 72

113. 1, 4, 16, 64, \_\_\_\_

- A. 256
- B. 128
- C. 192
- D. 224

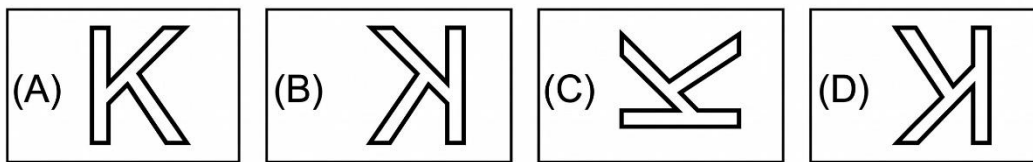
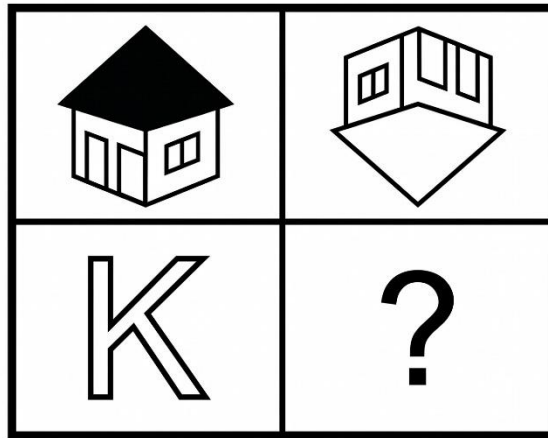
114. 1, 4, 9, 16, 25, \_\_\_\_

- A. 32
- B. 30
- C. 36
- D. 49

**NONVERBAL BATTERY (Questions 115–170)**

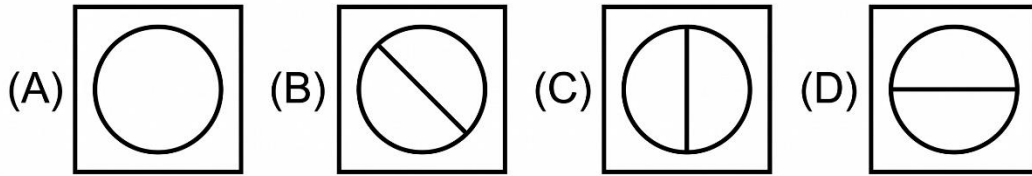
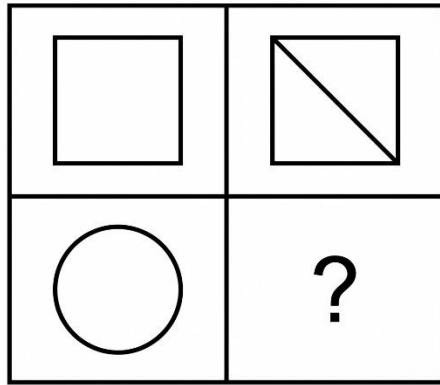
**Figure Matrices (Questions 115–133)**

115. Which figure completes the matrix?



- A. an upright letter K
- B. a mirror-image letter K
- C. a letter K rotated 90 degrees clockwise
- D. an upside-down letter K

116. Which figure completes the matrix?



- A. a plain circle
- B. a circle with a diagonal line
- C. a circle with a vertical line
- D. a circle with a horizontal line

117. Which figure completes the matrix?

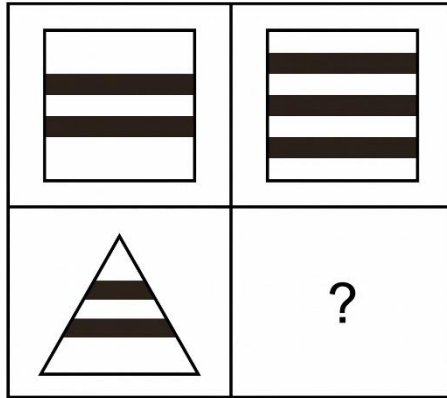
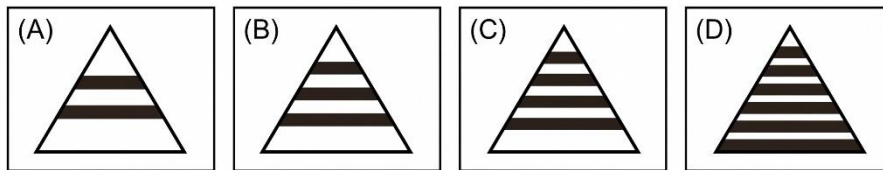
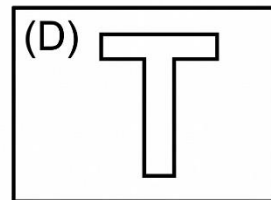
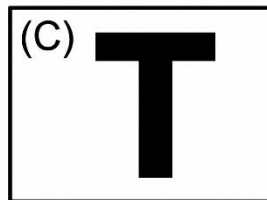
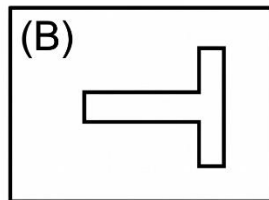
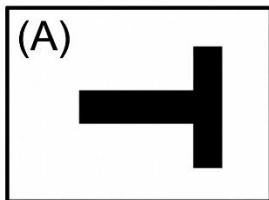
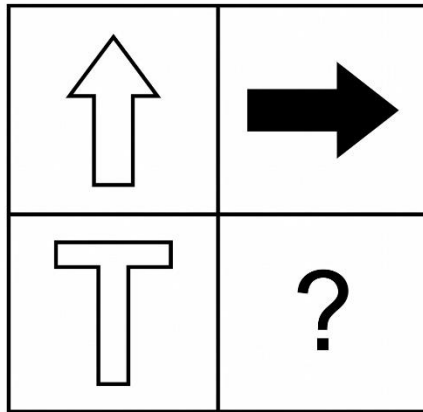


Figure PQ-3: Clean black-line technical diagram



- A. a triangle with 2 stripes
- B. a triangle with 3 stripes
- C. a triangle with 4 stripes
- D. a triangle with 6 stripes

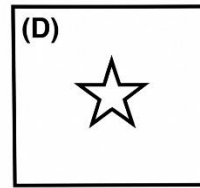
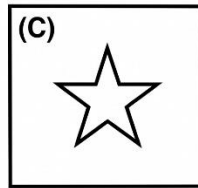
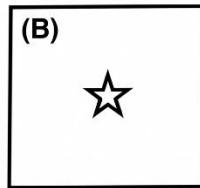
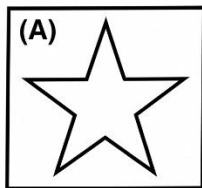
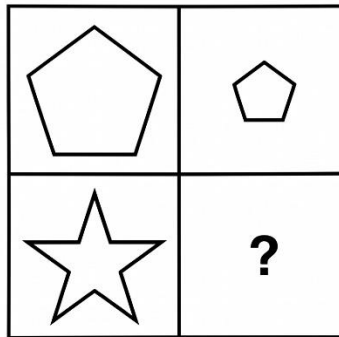
118. Which figure completes the matrix?



- A. a solid black T rotated 90 degrees clockwise
- B. an outlined T rotated 90 degrees clockwise
- C. a solid black T upright
- D. an outlined T upright

119. Which figure completes the matrix?

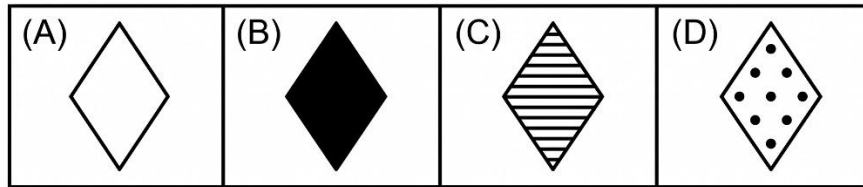
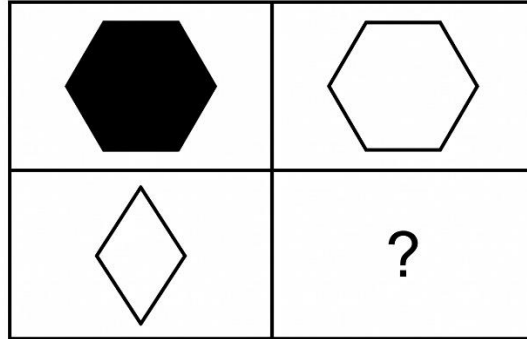
Figure PQ-5



- A. a large star
- B. a medium star
- C. a very small star
- D. a small star

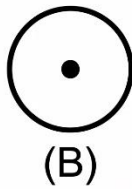
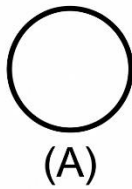
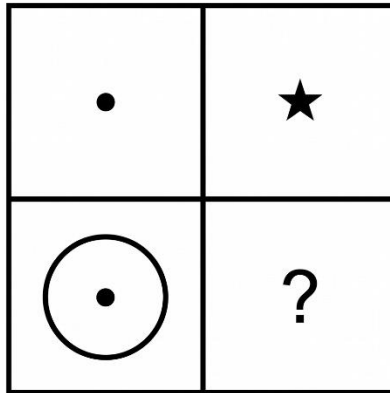
120. Which figure completes the matrix?

Figure PQ-6:



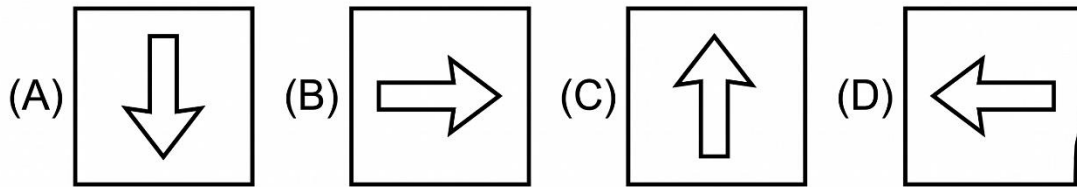
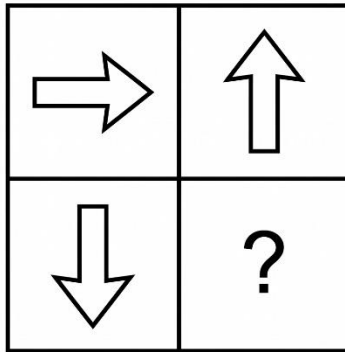
- A. an outlined diamond
- B. a solid black diamond
- C. a striped diamond
- D. a dotted diamond

121. Which figure completes the matrix?



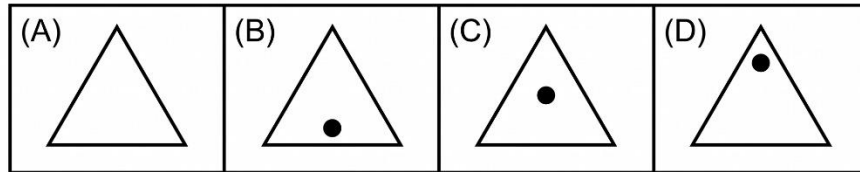
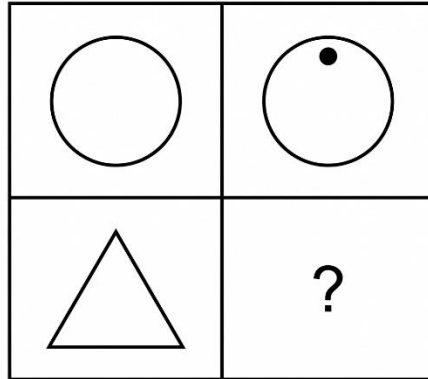
- A. a plain circle
- B. a circle with a dot
- C. a circle with a star inside
- D. a circle with a triangle inside

122. Which figure completes the matrix?



- A. an arrow pointing downward
- B. an arrow pointing rightward
- C. an arrow pointing upward
- D. an arrow pointing leftward

123. Which figure completes the matrix?



**Figure PQ-9**

- A. a plain triangle
- B. a triangle with a dot near the bottom
- C. a triangle with a dot at the centre
- D. a triangle with a dot near the top

124. Which figure completes the matrix?

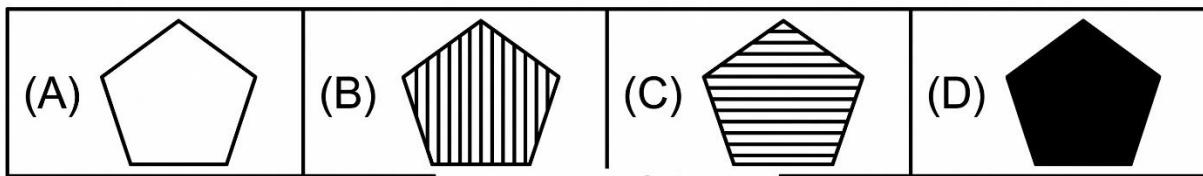
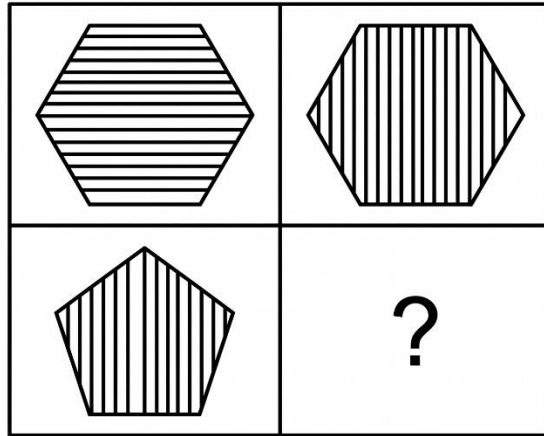
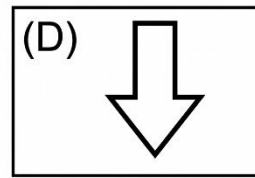
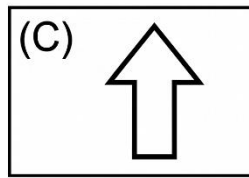
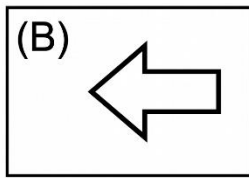
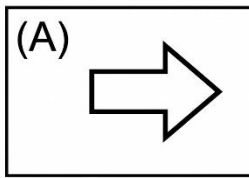
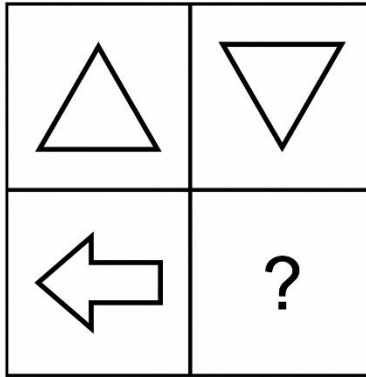


Figure PQ-10

- A. a plain pentagon
- B. a pentagon with vertical stripes
- C. a pentagon with horizontal stripes
- D. a solid black pentagon

125. Which figure completes the matrix?



- A. an arrow pointing rightward
- B. an arrow pointing leftward
- C. an arrow pointing upward
- D. an arrow pointing downward

126. Which figure completes the matrix?

Figure PQ-12

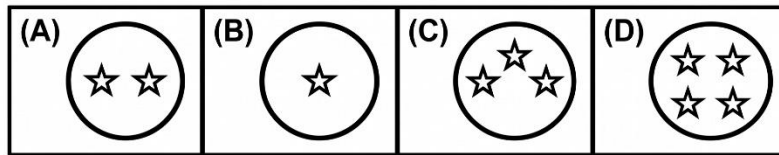
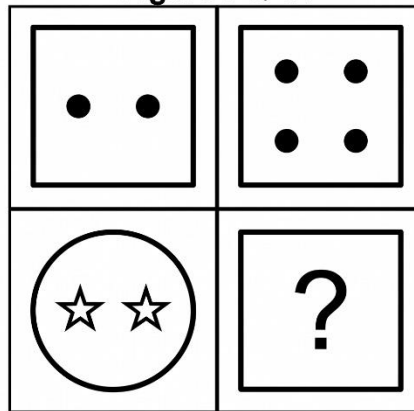
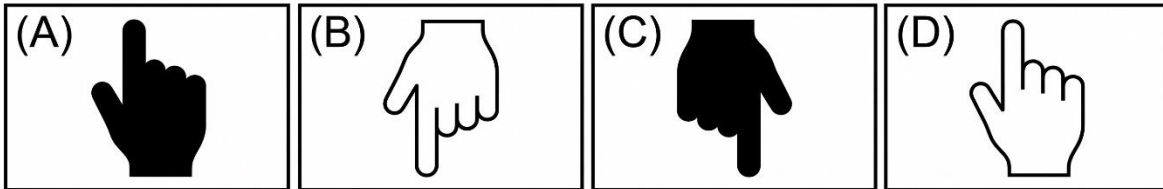
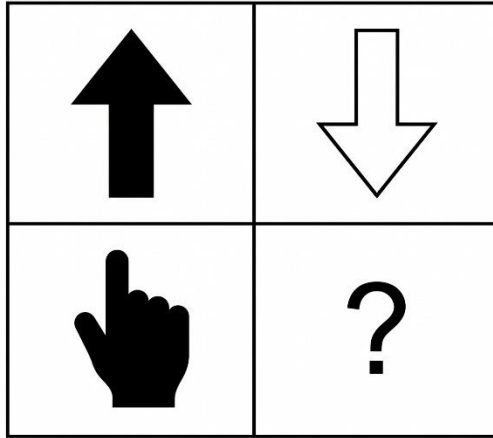


Figure PQ-12

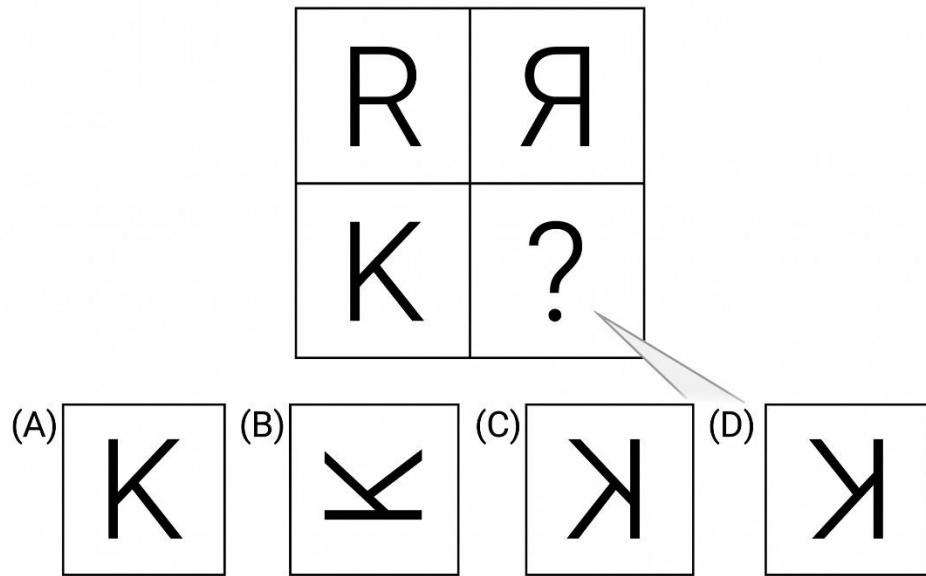
- A. a circle with 2 stars
- B. a circle with 1 star
- C. a circle with 3 stars
- D. a circle with 4 stars

127. Which figure completes the matrix?



- A. a solid hand pointing upward
- B. an outlined hand pointing downward
- C. a solid hand pointing downward
- D. an outlined hand pointing upward

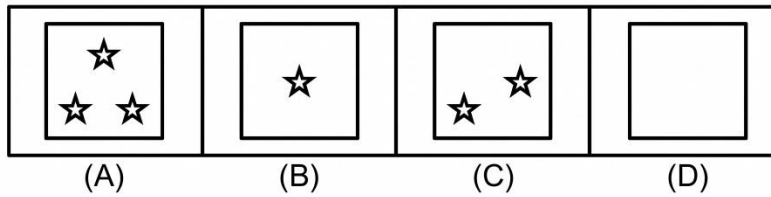
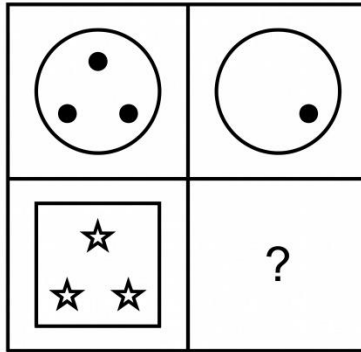
128. Which figure completes the matrix?



- A. an upright letter K
- B. a letter K rotated 90 degrees clockwise
- C. a mirror-image letter K
- D. an upside-down letter K

129. Which figure completes the matrix?

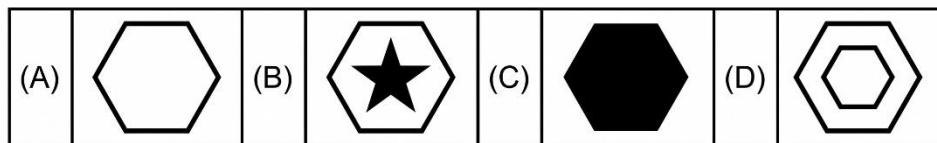
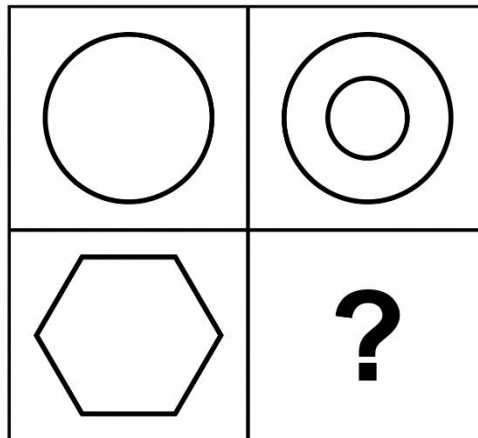
Figure PQ-15



- A. a square with 3 stars
- B. a square with 1 star
- C. a square with 2 stars
- D. an empty square

130. Which figure completes the matrix?

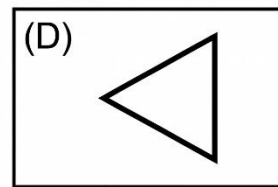
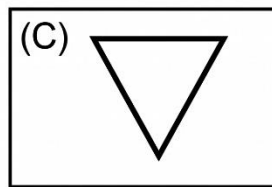
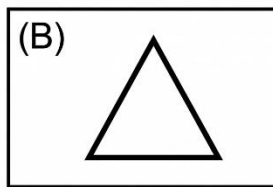
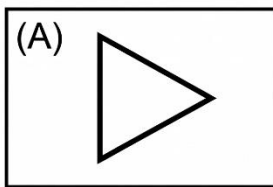
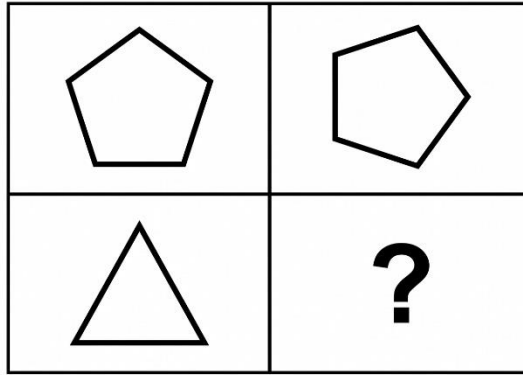
Figure PQ-16



- A. a plain hexagon
- B. a hexagon with a star inside
- C. a solid black hexagon
- D. a hexagon containing a smaller hexagon

131. Which figure completes the matrix?

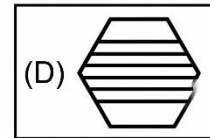
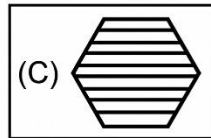
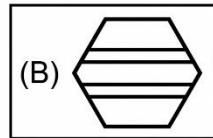
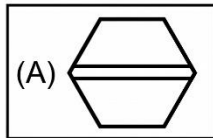
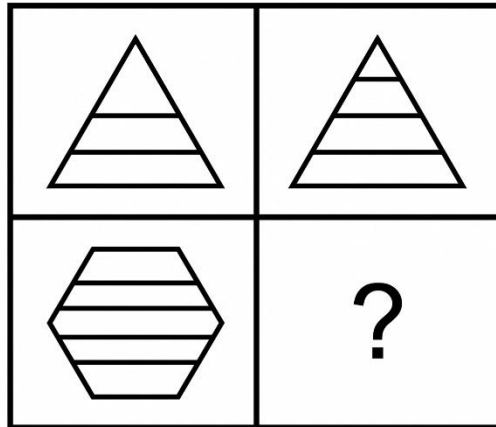
Figure PQ-17



- A. a triangle pointing rightward
- B. a triangle pointing upward
- C. a triangle pointing downward
- D. a triangle pointing leftward

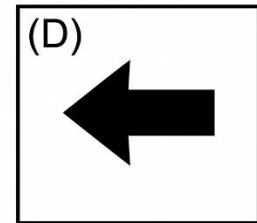
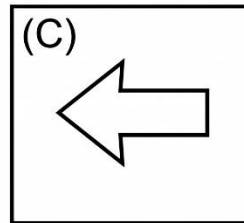
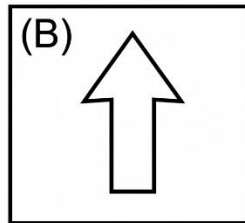
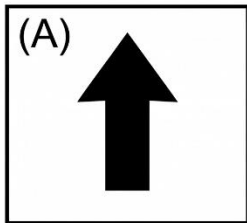
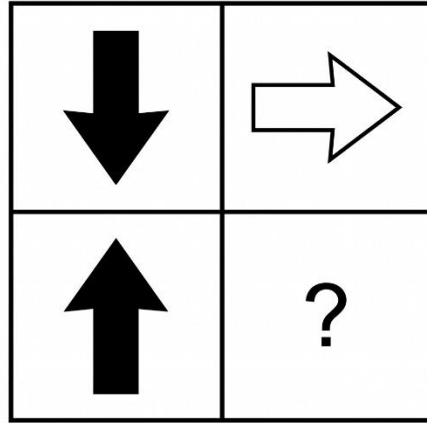
132. Which figure completes the matrix?

Figure PQ-18



- A. a hexagon with 1 stripe
- B. a hexagon with 2 stripes
- C. a hexagon with 4 stripes
- D. a hexagon with 3 stripes

133. Which figure completes the matrix?

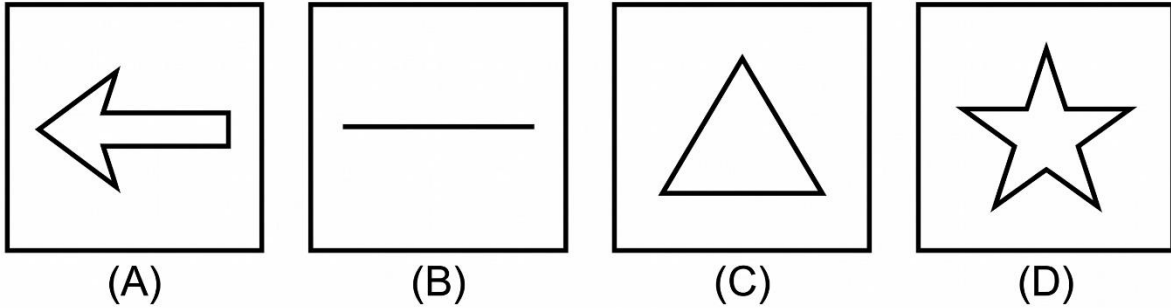
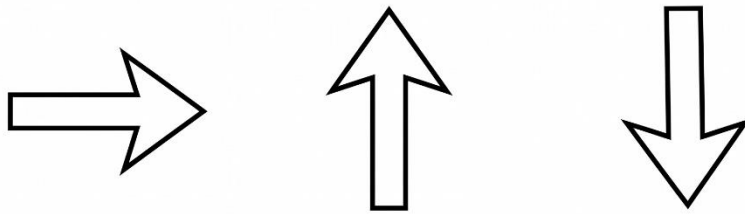


- A. a solid black arrow pointing upward
- B. an outlined arrow pointing upward
- C. an outlined arrow pointing leftward
- D. a solid black arrow pointing leftward

**Figure Classification (Questions 134–152)**

134. Which figure belongs with the three given figures?

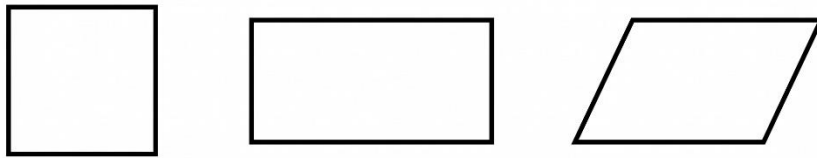
Figure PQ-20



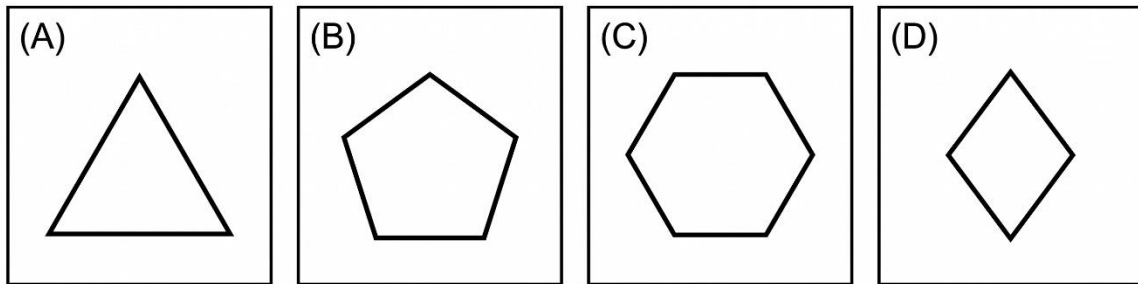
- A. an arrow pointing leftward
- B. a plain line
- C. a triangle
- D. a five-pointed star

135. Which figure belongs with the three given figures?

[Figure PQ-21]



All three are quadrilaterals (four-sided polygons).

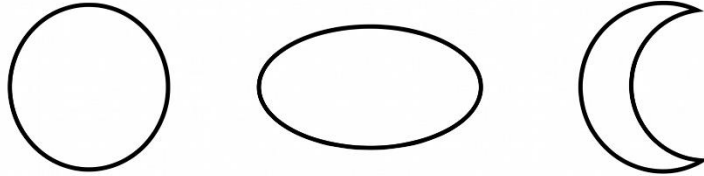


- A. a triangle
- B. a pentagon
- C. a hexagon
- D. a rhombus

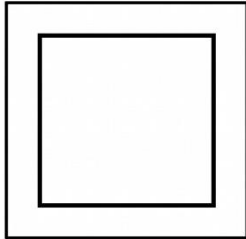
136. Which figure belongs with the three given figures?

**[Figure PQ-22]: Visual Analogy Puzzle**

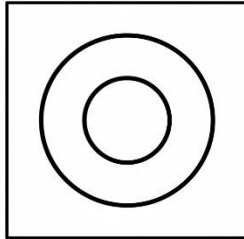
GIVEN FIGURES



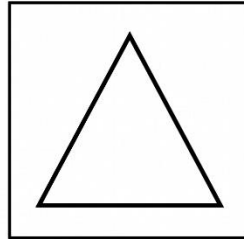
(A)



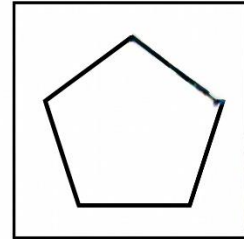
(B)



(C)

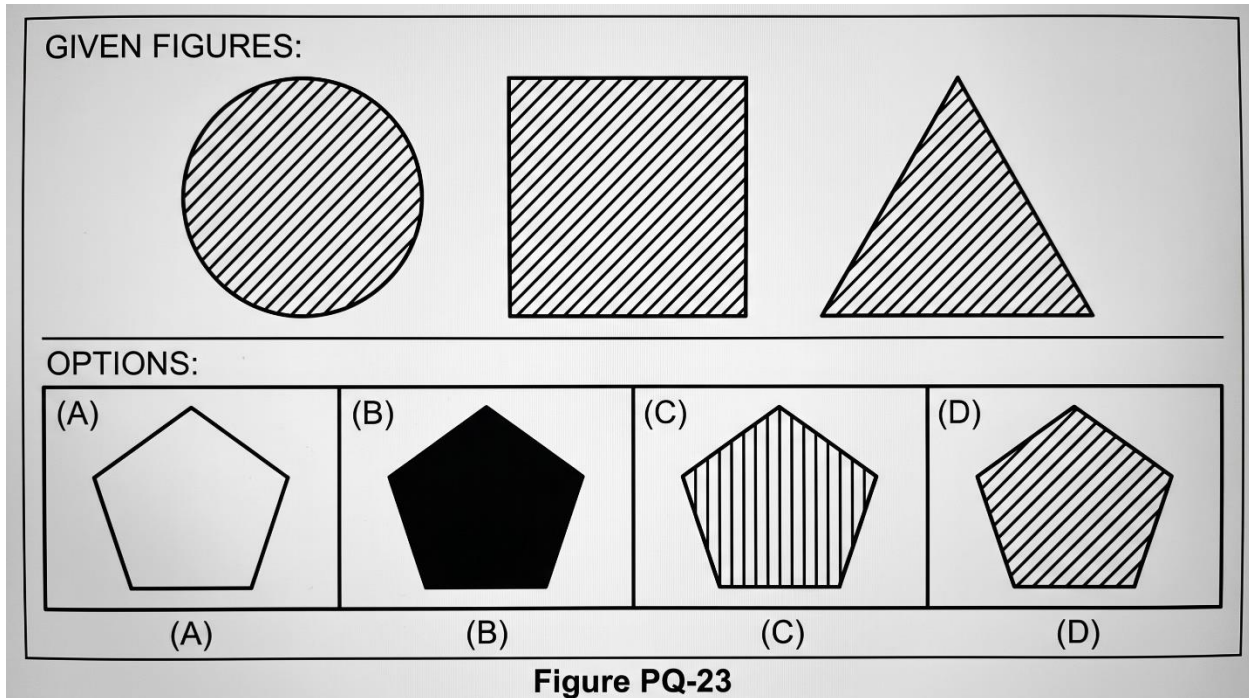


(D)



- A. a square
- B. a ring
- C. a triangle
- D. a pentagon

137. Which figure belongs with the three given figures?

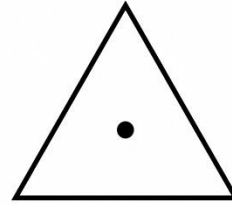
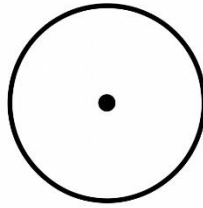
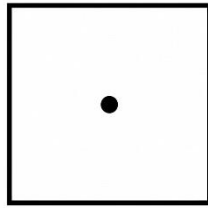


- A. a plain pentagon
- B. a solid black pentagon
- C. a pentagon with vertical stripes
- D. a pentagon with the same diagonal stripes

138. Which figure belongs with the three given figures?

Given figures:

Figure PQ-24



Answer-option:

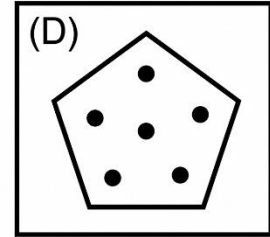
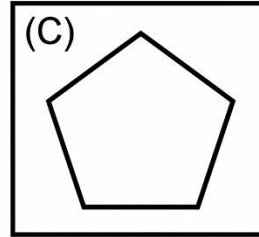
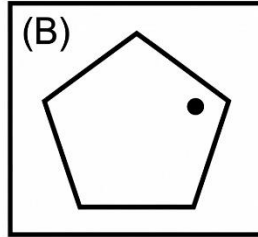
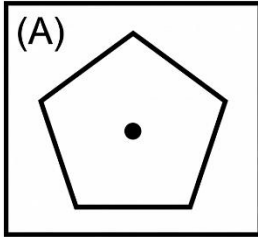
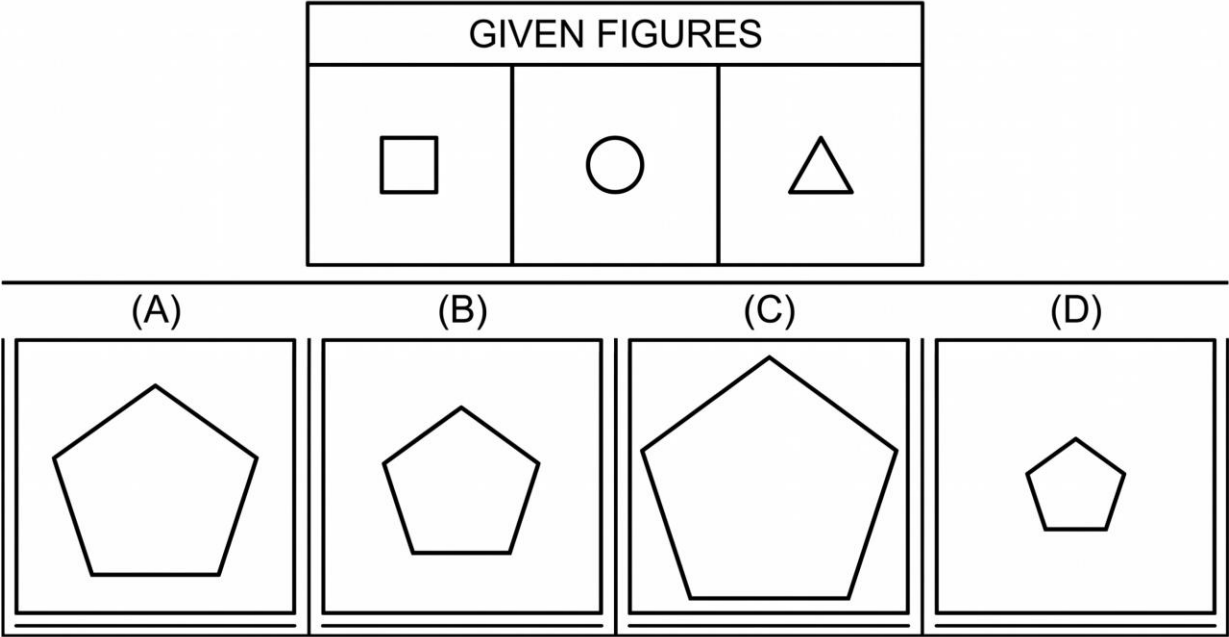


Figure PQ-24

- A. a pentagon with a centre dot
- B. a pentagon with a corner dot
- C. a plain pentagon
- D. a pentagon with multiple dots

139. Which figure belongs with the three given figures?

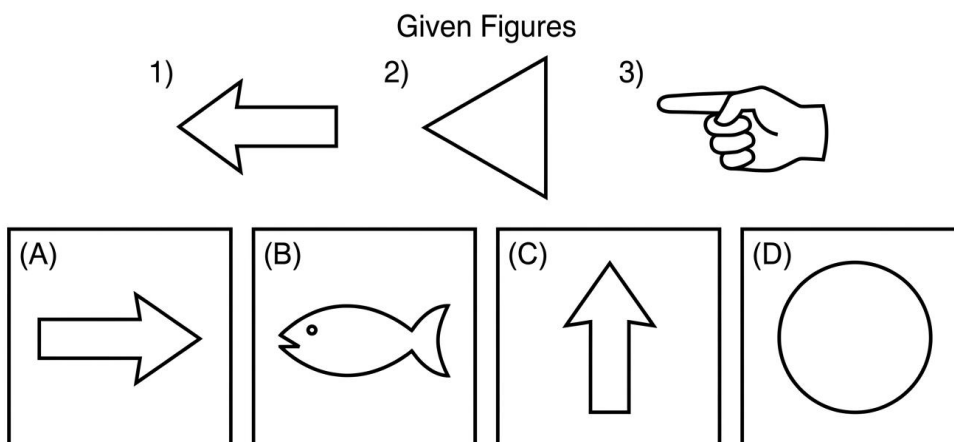
[Figure PQ-25]



- A. a large pentagon
- B. a medium pentagon
- C. a very large pentagon
- D. a small pentagon

140. Which figure belongs with the three given figures?

Figure PQ-26: Logical Pattern Reasoning

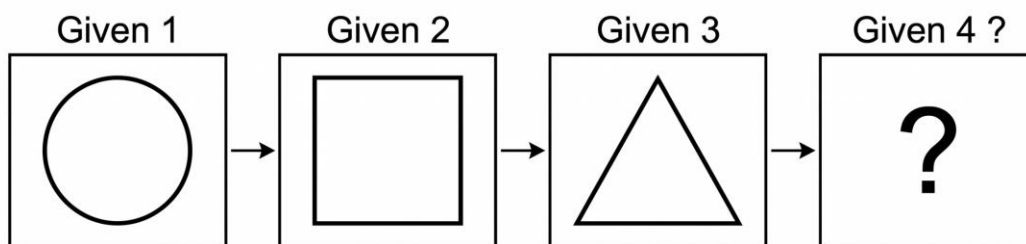


Which of the following figures continues the established logical sequence?

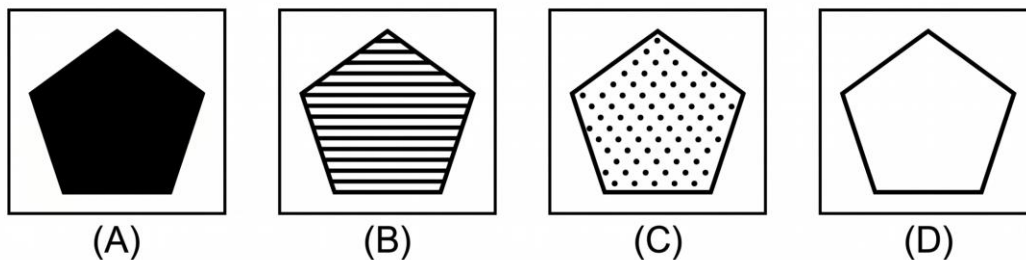
- A. an arrow pointing rightward
- B. a fish facing leftward
- C. an arrow pointing upward
- D. a plain circle

141. Which figure belongs with the three given figures?

Figure PQ-27: Pattern Completion



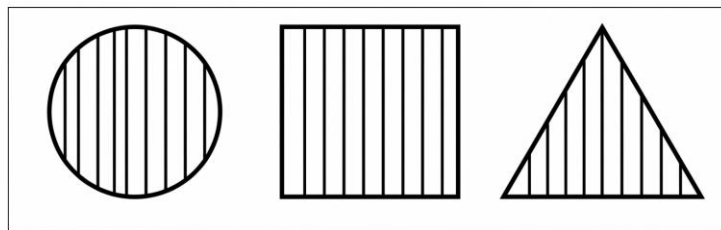
Select the missing figure from the options below:



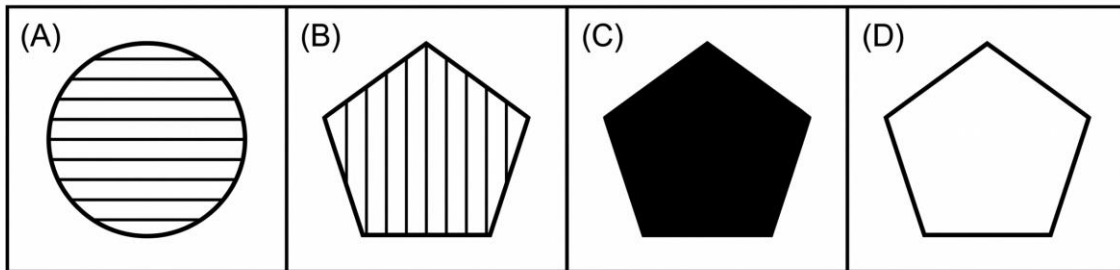
- A. a solid black pentagon
- B. a striped pentagon
- C. a dotted-fill pentagon
- D. a plain outlined pentagon

142. Which figure belongs with the three given figures?

FIGURE PQ-28



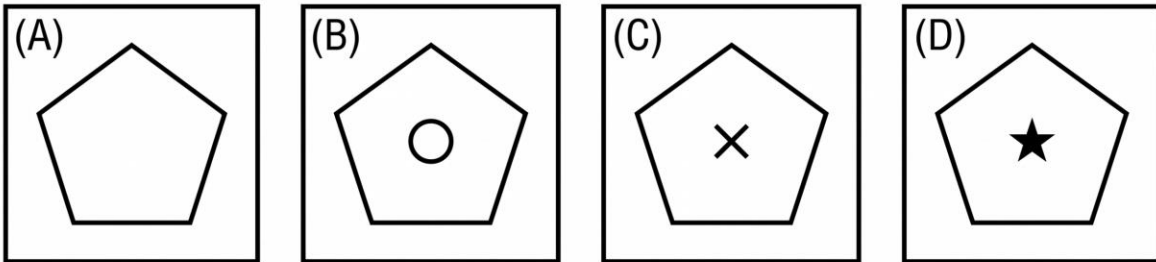
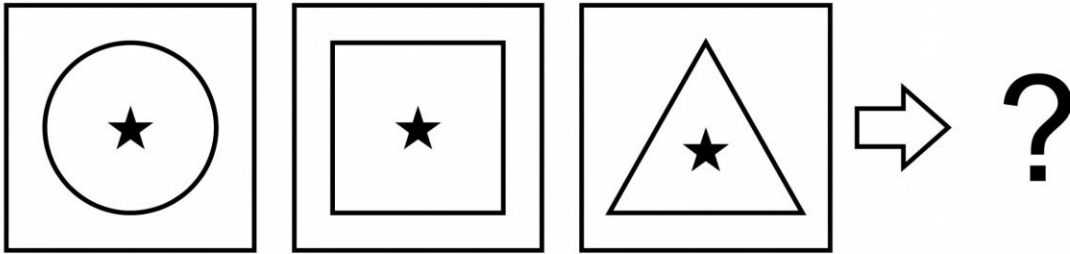
WHICH FIGURE COMES NEXT IN THE SEQUENCE?



- A. a circle with horizontal stripes
- B. a pentagon with vertical stripes
- C. a solid black pentagon
- D. a plain pentagon

143. Which figure belongs with the three given figures?

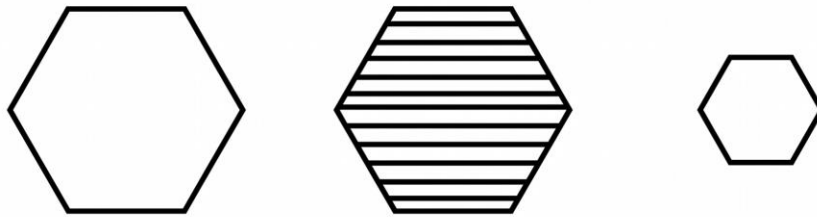
[Figure PQ-29]

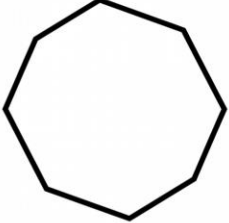
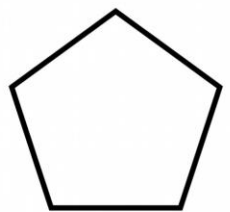
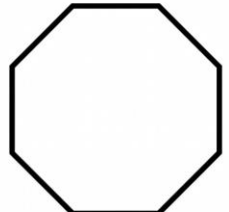
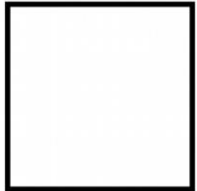


- A. a plain pentagon
- B. a pentagon with a circle inside
- C. a pentagon with an X inside
- D. a pentagon with a star inside

144. Which figure belongs with the three given figures?

**Figure PQ-30:**  
Given Figures

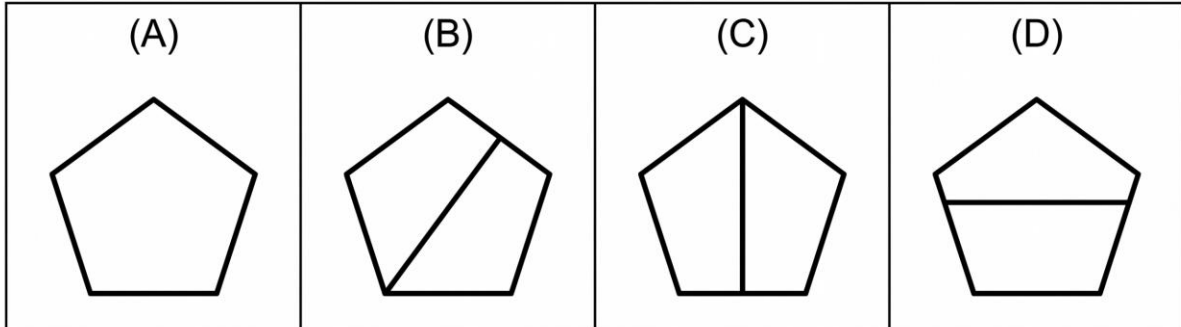
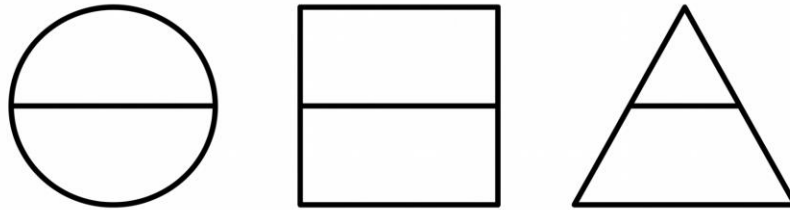


(A)	(B)	(C)	(D)
			

- A. a hexagon at an angle
- B. a pentagon
- C. an octagon
- D. a square

145. Which figure belongs with the three given figures?

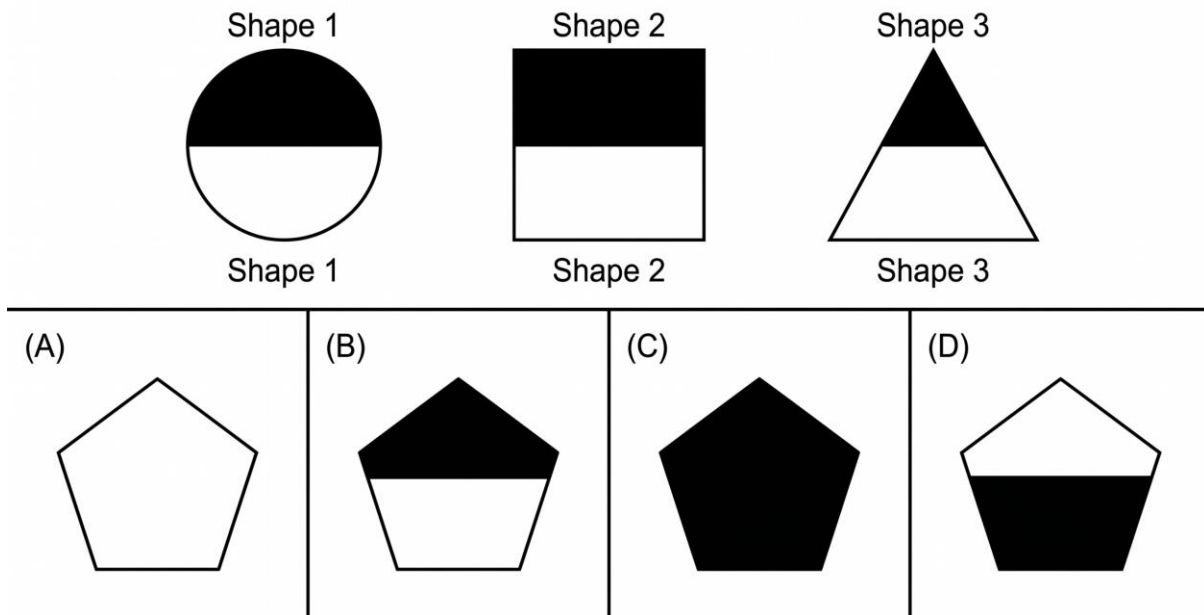
[Figure PQ-31]



- A. a plain pentagon
- B. a pentagon with a diagonal line
- C. a pentagon with a vertical line
- D. a pentagon with a horizontal line

146. Which figure belongs with the three given figures?

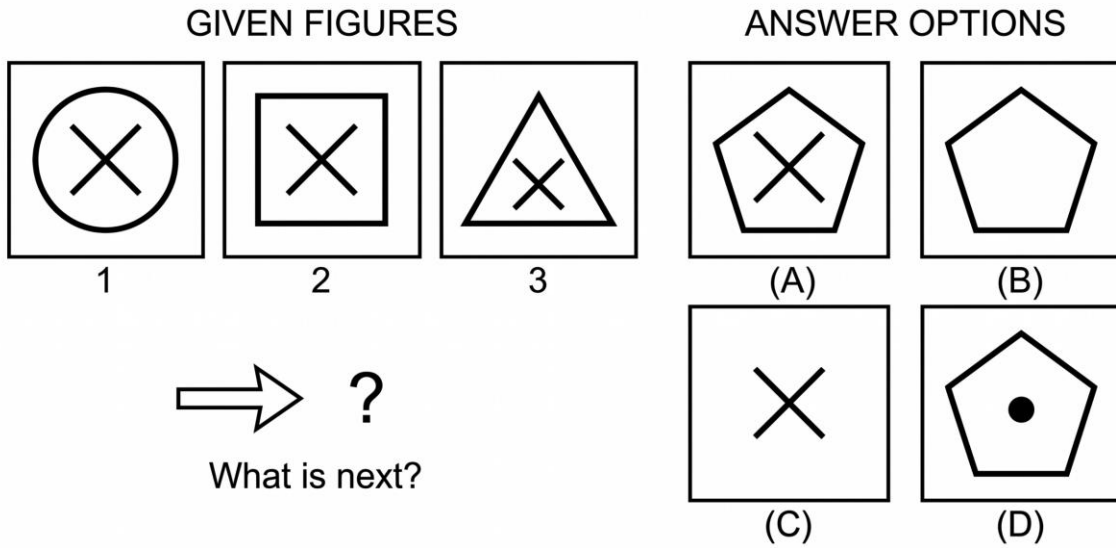
[Figure PQ-32: Clean black-line technical diagram on white background.]



- A. a plain pentagon
- B. a pentagon with top half black
- C. a solid black pentagon
- D. a pentagon with bottom half black

147. Which figure belongs with the three given figures?

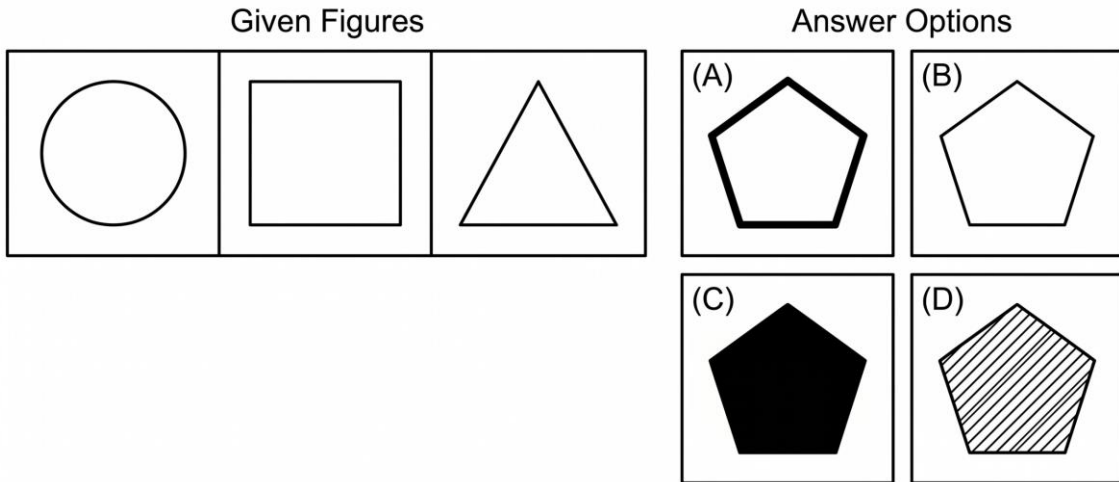
Figure PQ-33



- A. a pentagon with an X inside
- B. a plain pentagon
- C. an X mark alone
- D. a pentagon with a dot inside

148. Which figure belongs with the three given figures?

**Figure PQ-34:**

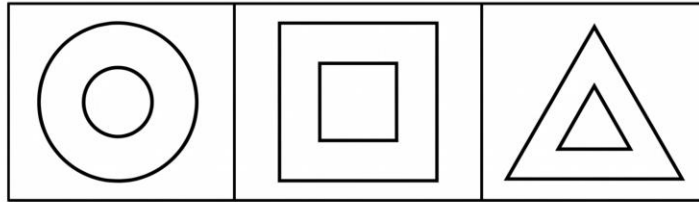


- A. a thick-bordered pentagon
- B. a thin-bordered pentagon
- C. a solid black pentagon
- D. a striped pentagon

149. Which figure belongs with the three given figures?

Figure PQ-35

Given Figures:



The three given figures above share the self-nested pattern: a larger shape containing a smaller, identical shape in the same orientation.

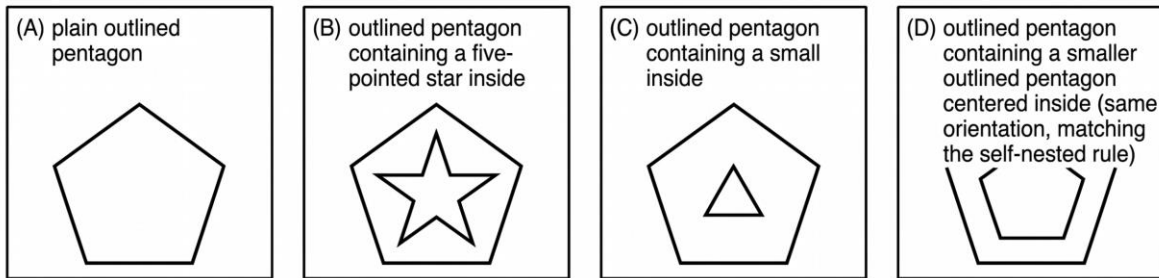
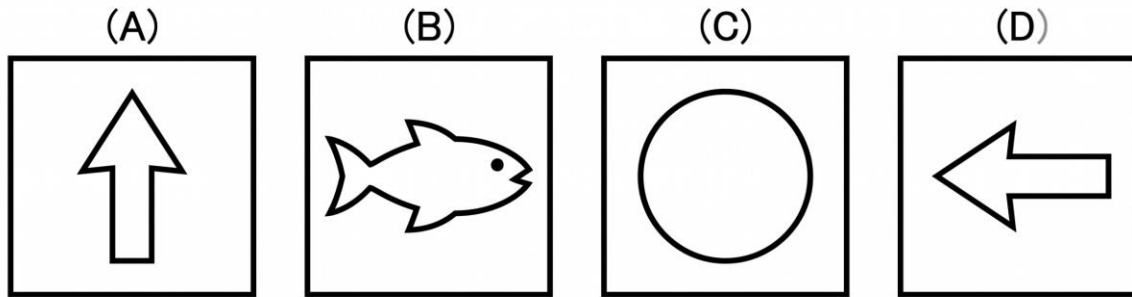
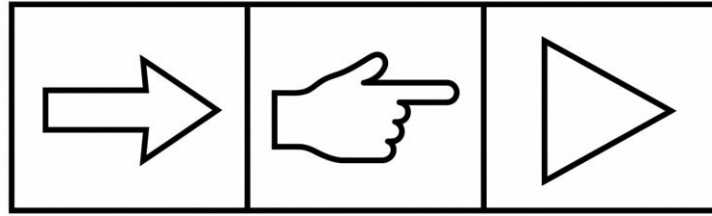


Figure PQ-35

- A. a plain pentagon
- B. a pentagon with a star inside
- C. a pentagon with a triangle inside
- D. a pentagon within a pentagon

150. Which figure belongs with the three given figures?

[Figure PQ-36]

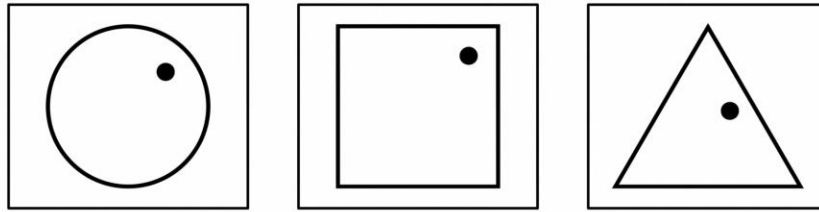


- A. an arrow pointing upward
- B. a fish facing rightward
- C. a plain circle
- D. an arrow pointing leftward

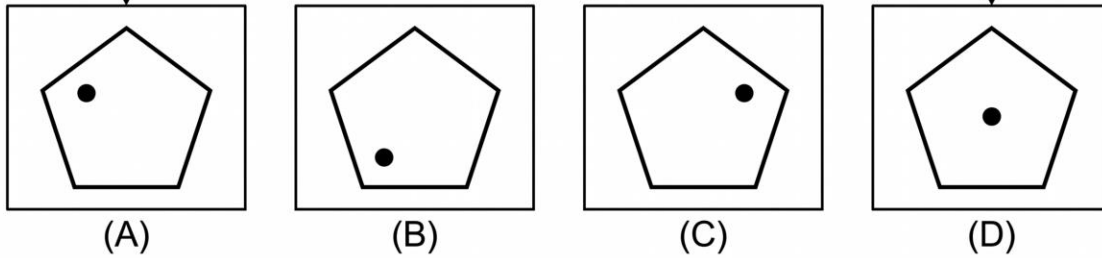
151. Which figure belongs with the three given figures?

Figure PQ-37

Given Figures



Answer Options



- A. a pentagon with dot in upper-left
- B. a pentagon with dot in lower-left
- C. a pentagon with dot in upper-right
- D. a pentagon with dot at centre

152. Which figure belongs with the three given figures?

Figure PQ-38

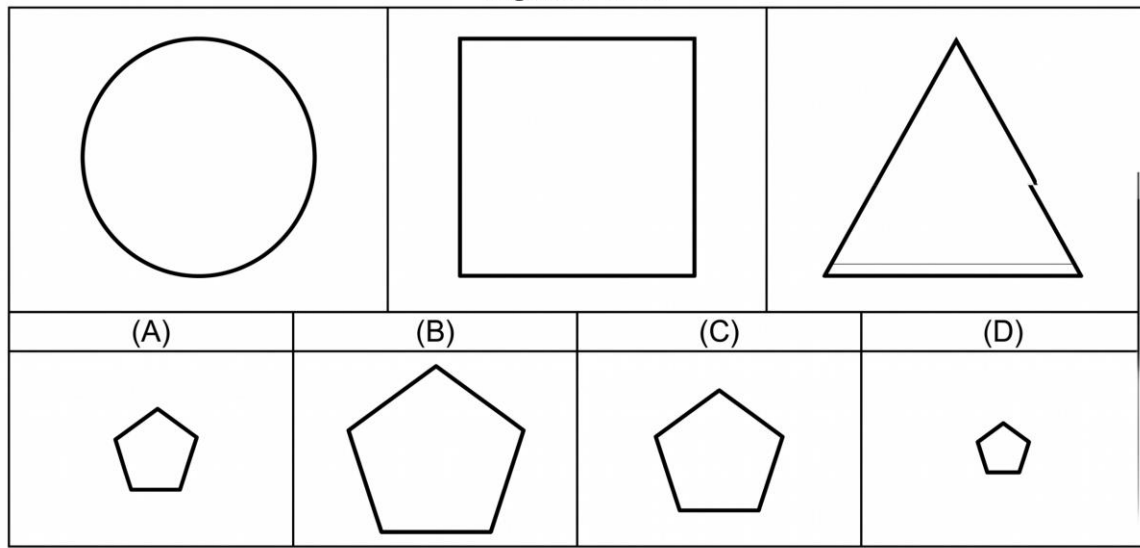


Figure PQ-38

- A. a small pentagon
- B. a large pentagon
- C. a medium pentagon
- D. a very small pentagon

**Paper Folding (Questions 153–170)**

153. A square sheet of paper is folded in half along a vertical line, with the right half folded over the left half. One hole is then punched through both layers near the lower-left corner of the folded shape, at the original paper's lower-left corner. When the paper is fully unfolded, where will the holes appear?

- A. One hole near the lower-left corner only
- B. Two holes near the left edge of the paper
- C. Two holes on the bottom edge of the paper — one at the lower-left corner and one at the lower-right corner, mirrored across the vertical middle
- D. Four holes — one near each of the four corners of the paper

154. A square sheet of paper is folded in half along a horizontal line, with the bottom half folded up over the top half. One hole is then punched through both layers approximately at the centre of the folded shape, midway between the left and right edges. When the paper is fully unfolded, where will the holes appear?

- A. Two holes on the vertical centerline of the paper — one in the upper half and one in the lower half, mirrored across the horizontal middle
- B. One hole at the very centre of the paper
- C. Four holes spread around the centre
- D. Two holes on the horizontal centerline

155. A square sheet of paper is folded in half vertically (right half over left half), then folded in half horizontally (top half down over bottom half). The folded shape is a small square in the lower-left quadrant of the original paper. One hole is then punched through all four layers near the centre of this folded shape. When the paper is fully unfolded, where will the holes appear?

- A. One hole at the very centre of the paper
- B. Two holes on the horizontal centerline
- C. Two holes on the vertical centerline
- D. Four holes — one near the centre of each of the four quadrants of the paper

156. A square sheet of paper is folded in half along a vertical line, with the left half folded over the right half. One hole is then punched exactly on the vertical fold line at the very top edge of the folded shape. When the paper is fully unfolded, where will the holes appear?

- A. Two holes near the top edge of the paper
- B. One hole on the top edge of the paper, at the vertical middle
- C. Four holes spread around the top edge
- D. Two holes on the vertical centerline

157. A square sheet of paper is folded along the diagonal that runs from the top-left corner to the bottom-right corner. The triangular half above the diagonal is folded down over the triangular half below the

diagonal. One hole is then punched approximately in the middle of the folded triangle, well away from the diagonal fold edge. When the paper is fully unfolded, where will the holes appear?

- A. One hole at the centre of the paper
- B. Two holes at the diagonal endpoints (top-left and bottom-right corners)
- C. Four holes spread around the centre
- D. Two holes symmetric across the diagonal — one in the upper-right interior and one in the lower-left interior of the paper

158. A square sheet of paper is folded in half along a horizontal line, with the top half folded down over the bottom half. One hole is then punched through both layers near the lower-right corner of the folded shape, at the original paper's lower-right corner area. When the paper is fully unfolded, where will the holes appear?

- A. One hole near the lower-right corner only
- B. Two holes on the right edge of the paper — one at the upper-right corner and one at the lower-right corner, mirrored across the horizontal middle
- C. Four holes at the four corners
- D. Two holes on the horizontal centerline

159. A square sheet of paper is folded along the diagonal that runs from the bottom-left corner to the top-right corner. The triangular half above the diagonal is folded down over the triangular half below the diagonal. One hole is then punched exactly on the diagonal fold edge itself, near the middle of the diagonal. When the paper is fully unfolded, where will the holes appear?

- A. One hole on the diagonal of the paper, near the centre
- B. Two holes mirrored across the diagonal
- C. Four holes spread around the centre
- D. Two holes at the diagonal endpoints

160. A square sheet of paper is folded in half vertically (right half over left half), then folded in half horizontally (top half down over bottom half). The folded shape is a small square in the lower-left

quadrant. One hole is then punched exactly at the upper-right corner of the folded shape — the point where both fold lines cross, which is the centre of the original paper. When the paper is fully unfolded, where will the holes appear?

- A. Four holes spread around the centre
- B. Two holes on the horizontal centerline
- C. One hole exactly at the very centre of the paper
- D. Two holes on the vertical centerline

161. A square sheet of paper is folded in half along a vertical line, with the right half folded over the left half. Two holes are then punched through both layers — one near the upper-left corner of the folded shape (at the original paper's upper-left corner) and one near the lower-left corner of the folded shape (at the original paper's lower-left corner). When the paper is fully unfolded, where will the holes appear?

- A. Two holes on the left edge of the paper only
- B. Four holes — one near each of the four corners of the paper
- C. Two holes on the right edge of the paper only
- D. Two holes on the diagonal of the paper

162. A square sheet of paper is folded along the diagonal that runs from the top-right corner to the bottom-left corner. The triangular half above the diagonal is folded down over the triangular half below the diagonal. One hole is then punched through both layers near the bottom-right corner of the original paper (which sits in the lower-right interior of the folded triangle, well away from the diagonal fold). When the paper is fully unfolded, where will the holes appear?

- A. One hole at the centre of the paper
- B. Two holes at the diagonal endpoints (bottom-left and top-right corners)
- C. Four holes spread around the centre
- D. Two holes — one near the bottom-right corner and one near the top-left corner of the paper, mirrored across the diagonal

163. A square sheet of paper is folded in half along a horizontal line, with the bottom half folded up over the top half. One hole is then punched exactly on the horizontal fold line, midway between the left and right edges of the folded shape. When the paper is fully unfolded, where will the holes appear?

- A. One hole at the very centre of the paper
- B. Two holes on the horizontal centerline
- C. Four holes spread around the centre
- D. Two holes mirrored across the horizontal middle

164. A square sheet of paper is folded in half along a vertical line, with the right half folded over the left half. Two holes are then punched through both layers very close to the vertical fold line — one near the top of the folded shape and one near the bottom of the folded shape. When the paper is fully unfolded, where will the holes appear?

- A. Two holes near the top edge of the paper only
- B. Four holes near the vertical centerline of the paper — two close together near the top edge and two close together near the bottom edge, all straddling the vertical middle
- C. Two holes near the bottom edge of the paper only
- D. One hole at the very centre of the paper

165. A square sheet of paper is folded in half along a horizontal line, with the top half folded down over the bottom half. One hole is then punched through both layers near the lower-left corner of the folded shape, at the original paper's lower-left corner area. When the paper is fully unfolded, where will the holes appear?

- A. One hole near the lower-left corner only
- B. Four holes near the corners of the paper
- C. Two holes on the bottom edge of the paper
- D. Two holes on the left edge of the paper — one at the upper-left corner and one at the lower-left corner, mirrored across the horizontal middle

166. A square sheet of paper is folded along the diagonal that runs from the top-left corner to the bottom-right corner. The triangular half above the diagonal is folded down over the triangular half below the diagonal. One hole is then punched exactly on the diagonal fold edge itself, near the middle of the diagonal. When the paper is fully unfolded, where will the holes appear?

- A. One hole exactly at the very centre of the paper
- B. Two holes mirrored across the diagonal
- C. Four holes around the centre
- D. Two holes at the diagonal endpoints (top-left and bottom-right corners)

167. A square sheet of paper is folded in half vertically (left half over right half), then folded in half horizontally (top half down over bottom half). The folded shape is a small square in the lower-right quadrant. One hole is then punched through all four layers near the lower-right corner of the folded shape, at the original paper's lower-right corner area, well away from both fold lines. When the paper is fully unfolded, where will the holes appear?

- A. One hole at the lower-right corner only
- B. Four holes — one near each of the four corners of the paper
- C. Two holes on the bottom edge of the paper
- D. Two holes on the diagonal of the paper

168. A square sheet of paper is folded in half along a vertical line, with the left half folded over the right half. One hole is then punched through both layers near the upper-right corner of the folded shape, at the original paper's upper-right corner area. When the paper is fully unfolded, where will the holes appear?

- A. One hole near the upper-right corner only
- B. Four holes at the four corners
- C. Two holes on the right edge of the paper
- D. Two holes on the top edge of the paper — one at the upper-left corner and one at the upper-right corner, mirrored across the vertical middle

169. A square sheet of paper is folded along the diagonal that runs from the bottom-left corner to the top-right corner. The triangular half above the diagonal is folded down over the triangular half below the diagonal. One hole is then punched approximately in the middle of the folded triangle, well away from the diagonal fold edge. When the paper is fully unfolded, where will the holes appear?

- A. Two holes symmetric across the diagonal — one in the upper-left interior and one in the lower-right interior of the paper
- B. One hole at the centre of the paper
- C. Two holes at the diagonal endpoints (bottom-left and top-right corners)
- D. Four holes spread around the centre

170. A square sheet of paper is folded in half vertically (right half over left half), then folded in half horizontally (bottom half up over top half). The folded shape is a small square in the upper-left quadrant of the original paper. One hole is then punched through all four layers near the upper-left corner of the folded shape, at the original paper's upper-left corner area, well away from both fold lines. When the paper is fully unfolded, where will the holes appear?

- A. One hole near the upper-left corner only
- B. Two holes on the left edge of the paper
- C. Two holes on the top edge of the paper
- D. Four holes — one near each of the four corners of the paper

## Answer Key and Explanations

### Verbal Analogies

**1. A** — Big and large are synonyms; small and tiny are also synonyms. The relationship is "synonym pair." Huge means very large, medium is moderate, and heavy describes weight — none are synonyms for small.

**2. B** — Up and down are opposite directions; left and right are opposite directions. The relationship is "opposite directional pair." Away is general direction, side is a position, and centre is a location — none are the opposite of left.

- 3. D** — A brush is the signature tool of a painter; a needle is the signature tool of a tailor. The relationship is "tool and the worker who uses it." Cloth is the material, button is what is sewn on, and thread passes through the needle.
- 4. C** — A seed grows into a plant; a caterpillar grows into a butterfly. The relationship is "young form and what it transforms into." Cocoon is the in-between stage, leaf is what caterpillars eat, and wing is a body part.
- 5. A** — A spoke is a part of a wheel; a branch is a part of a tree. The relationship is "small radiating part and the larger whole." Leaf is on a branch, wood is the material, and forest is many trees together.
- 6. C** — A pencil's function is to write; scissors' function is to cut. The relationship is "tool and its primary action." Paper is the surface, sharp is a property, and tool is a category.
- 7. B** — Morning is the time of breakfast; evening is the time of dinner. The relationship is "time of day and its main meal." Afternoon is between mealtimes, sleep follows dinner, and moon is a celestial body.
- 8. D** — A bottle typically holds water; a jar typically holds jam. The relationship is "container and what it commonly holds." Lid is the cover, round describes shape, and glass is the material.
- 9. B** — Clay is the raw material made into pottery; flour is the raw material made into bread. The relationship is "raw ingredient and the food or product made from it." White describes flour, baker is the maker, and mixer is a tool.
- 10. A** — A spider lives in and builds a web; a rabbit lives in and digs a burrow. The relationship is "animal and its home." Carrot is food, fur is body covering, and hop is the action.
- 11. C** — A knife is used to cut; a ruler is used to measure. The relationship is "tool and its primary use." Wood is what is cut, straight describes the ruler, and number is on a ruler but is not its action.
- 12. A** — Tall and short are opposite measurements of height; wide and narrow are opposite measurements of width. The relationship is "opposite pair describing size." High refers to height, long to length, and flat to shape.
- 13. C** — A penguin's natural habitat is ice; a monkey's natural habitat is trees. The relationship is "animal and its native habitat." Banana is food, tail is a body part, and jump is an action.
- 14. A** — Sunrise occurs in the morning; sunset occurs in the evening. The relationship is "celestial event and the part of day when it happens." Star, dark, and moon relate to night but are not parts of the day cycle that match sunset.
- 15. B** — The sun is the dominant feature of day; the moon is the dominant feature of night. The relationship is "celestial body and the part of the day cycle it rules." Round describes shape, dark describes light level, and cold describes temperature.

**16. D** — An author creates a novel; a composer creates a symphony. The relationship is "artistic creator and the finished work." Piano is an instrument, orchestra is performers, and note is a building block.

**17. C** — Eyes do the action of seeing; ears do the action of hearing. The relationship is "sense organ and its primary action." Listen is a more active word, and music and sound are what ears perceive rather than the action itself.

**18. B** — A tennis player uses a racket as the primary tool; a golf player uses a club as the primary tool. The relationship is "sport and the main piece of equipment." Ball is what is hit, and green and hole are parts of the golf course.

**19. C** — A day is one unit of a week; a month is one unit of a year. The relationship is "smaller time unit and the larger time period it makes up." Minute and hour are smaller than a day, and calendar is a record.

### **Sentence Completion**

**20. B** — Working late to complete an experiment before a deadline means wanting to finish it. The signal "before the morning deadline" calls for a verb meaning to complete. Forget and ignore abandon the work, and start would not require staying late.

**21. D** — Trusting one's memory of the route gives the confidence to follow an overgrown path. The signal "trusted his memory" calls for a manner showing self-assurance. Quickly, loudly, and lazily do not match the confidence cue.

**22. C** — Learning to walk without wobbling means walking steadily. The signal "wobbled at first but soon learned" combined with "without falling" calls for the improved manner. Backward and softly are unrelated, and quickly does not address wobbling.

**23. B** — Searching for the smallest clue requires close, thorough attention — careful examination. The signal "even the smallest clue might solve the mystery" calls for a precise manner. Quickly would miss details, and happily and accidentally do not fit detective work.

**24. C** — Playing one's best, even in defeat, gives a sense of accomplishment — pride. The signal "had played their very best" calls for a positive feeling. Angry, embarrassed, and lonely contradict pride in effort.

**25. D** — A sky that holds everyone's stare at sunset is described as beautiful. The signal "no one could stop staring" calls for an aesthetic positive. Cloudy, dim, and plain would not hold attention.

**26. C** — Spending several weeks on a thousand-piece puzzle requires patience. The signal "over a thousand tiny pieces" combined with "several weeks" calls for a manner showing endurance. Once and quickly contradict the long timeframe, and roughly would damage pieces.

**27. A** — A library requires low voices so others can focus, which means speaking quietly. The signal "other readers could focus on their books without distraction" calls for low volume. Loudly, quickly, and firmly do not reduce noise.

- 28. C** — After getting soaked, the family laughed and located a dry spot — they found it. The signal "laughed about it and \_\_\_ a dry spot" calls for a verb meaning to discover. Ignored leaves them wet, dropped is unrelated, and lost contradicts finding shelter.
- 29. B** — A relaxing porch tea is enjoyed by sipping slowly. The signal "sat on the porch" combined with "watching the sunset" calls for a relaxed drinking verb. Spilled is an accident, ate is wrong for tea, and cooked happens before serving.
- 30. A** — Instructions that everyone understands on the first try must be clear. The signal "every student understood exactly what to do on the very first try" calls for a quality enabling instant comprehension. Confusing contradicts, and quiet and quick describe delivery rather than content.
- 31. C** — Training for a long marathon over many months requires sustained, serious effort. The signal "over twenty kilometres" combined with "many months in advance" calls for a manner showing dedication. Lazily, quickly, and easily all contradict serious training.
- 32. A** — A bookshelf that fits everything with room left over must be spacious. The signal "fit every novel, magazine, and encyclopedia they owned with room left over" calls for an adjective describing ample interior. Narrow, small, and tilted all contradict ample capacity.
- 33. C** — A funny joke produces laughing that is hard to stop. The signal "funny joke" calls for the response that fits laughter. Crying, yawning, and running are unrelated to joke responses.
- 34. B** — A trail requiring ropes near the top must be steep. The signal "had to use ropes for the final dangerous section" calls for a description of difficulty. Easy contradicts, and wet and crowded do not explain why ropes are needed.
- 35. C** — A small amount of pepper added to soup is called a pinch. The signal "sprinkled" combined with "extra spice" calls for a small unit of seasoning. Spoonful and handful are too much, and cup is far too much for a single ingredient.
- 36. B** — A cat reacting instantly to the can opener leaps to her feet — she jumps. The signal "the instant the can opener clicked" calls for a quick upward motion. Fell goes downward, and crawled and walked are too slow for an instant reaction.
- 37. D** — A kite flying so high it cannot be seen from the ground means seeing it is impossible. The signal "higher and higher" combined with "almost \_\_\_ to see" calls for a negative outcome of visibility. Easy, close, and simple all contradict losing sight.
- 38. B** — Two hours of garden work in hot sun produces physical exhaustion — tiredness. The signal "two hours" combined with "sat down on the bench for a long break" calls for the state needing rest. Excited, happy, and proud do not require a long break.

## Verbal Classification

- 39. C** — Diamond, ruby, and emerald are all precious stones (gemstones); sapphire is also a precious stone. Metal is a different material, crown is jewellery, and shine is a property. The category is "precious stones."
- 40. D** — Violin, guitar, and harp are all string instruments; cello is also a string instrument. Drum is percussion, flute and trumpet are wind instruments. The specific category is "string instruments."
- 41. C** — Snake, lizard, and turtle are all reptiles (cold-blooded vertebrates with scales); crocodile is also a reptile. Frog and salamander are amphibians, and fish is a different class. The category is "reptiles."
- 42. A** — Oak, maple, and willow are all broad-leaved trees; elm is also a broad-leaved tree. Pine is an evergreen with needles, bush is a shrub, and fern is a non-tree plant. The specific category is "broad-leaved trees."
- 43. D** — North, south, and east are three of the four cardinal directions; west is the fourth cardinal direction. Up, left, and centre are not compass directions. The category is "cardinal directions."
- 44. B** — Mars, Jupiter, and Saturn are planets in our solar system; Venus is also a planet. Moon is a satellite, asteroid is a rocky body, and comet is icy debris. The category is "planets."
- 45. C** — Butterfly, bee, and moth are all flying insects; dragonfly is also a flying insect. Spider is an arachnid, worm has no wings, and snail moves slowly along the ground. The specific category is "flying insects."
- 46. B** — Shovel, rake, and hoe are all garden tools; trowel is also a garden tool. Drill, saw, and wrench are workshop or construction tools. The category is "garden tools."
- 47. A** — Happy, joyful, and glad are all synonyms meaning pleased; cheerful is another synonym for happy. Angry, tired, and quiet are unrelated feelings or states. The category is "synonyms for happy."
- 48. C** — Square, rectangle, and triangle are all flat (two-dimensional) shapes; pentagon is also a flat two-dimensional shape. Cube, sphere, and cylinder are three-dimensional solids. The specific category is "two-dimensional shapes."
- 49. A** — Basketball, football, and baseball are all ball sports; soccer is also a ball sport. Running, swimming, and chess do not use a ball. The category is "ball sports."
- 50. C** — Chair, bench, and stool are all pieces of furniture made for sitting; sofa is also for sitting. Table, lamp, and desk are for other purposes. The category is "seating furniture."
- 51. D** — Lion, tiger, and leopard are all big cats (large wild felines); cheetah is also a big cat. Mouse is a rodent, dog and fox are canines. The specific category is "big cats."

**52. C** — Book, magazine, and newspaper are all printed reading materials; journal is also a printed reading material. Pen is a writing tool, shelf holds books, and paper is the medium.

**53. D** — London, Paris, and Tokyo are all capital cities; Berlin is also a capital city. Ocean and river are bodies of water, and country is what a capital belongs to.

**54. C** — Piano, drums, and guitar are musical instruments; trumpet is also a musical instrument. Song, note, and concert relate to music but are not instruments.

**55. A** — Swimming, diving, and surfing are all water sports done in or on water; sailing is also a water sport. Running and skating happen on land, and skiing is a snow sport.

**56. D** — Morning, afternoon, and evening are parts of a day; night is also a part of a day. Clock, sun, and day itself are not parts of a day in this sense. The category is "parts of a day."

**57. A** — Singer, dancer, and actor are all performing artists who perform for an audience; musician is also a performer. Teacher, doctor, and farmer are non-performing professions. The category is "performers."

### Number Analogies

**58. C** — The rule is "multiply by 10." First pair ( $2 \times 10 = 20$ ), second pair ( $3 \times 10 = 30$ ), so  $4 \times 10 = 40$ . Both establishing pairs confirm the  $\times 10$  rule.

**59. B** — The rule is "divide by 7." First pair ( $14 \div 7 = 2$ ), second pair ( $21 \div 7 = 3$ ), so  $35 \div 7 = 5$ . The consistent ratio of one-seventh confirms division.

**60. C** — The rule is "multiply by 11." First pair ( $2 \times 11 = 22$ ), second pair ( $3 \times 11 = 33$ ), so  $4 \times 11 = 44$ . The consistent  $\times 11$  multiplier confirms multiplication.

**61. D** — The rule is "multiply by 12." First pair ( $1 \times 12 = 12$ ), second pair ( $2 \times 12 = 24$ ), so  $3 \times 12 = 36$ . The consistent  $\times 12$  multiplier confirms multiplication.

**62. B** — The rule is a combined operation: "multiply by 2, then add 5." First pair ( $1 \times 2 + 5 = 7$ ), second pair ( $2 \times 2 + 5 = 9$ ), so  $3 \times 2 + 5 = 11$ .

**63. A** — The rule is a combined operation: "multiply by 3, then add 5." First pair ( $1 \times 3 + 5 = 8$ ), second pair ( $2 \times 3 + 5 = 11$ ), so  $3 \times 3 + 5 = 14$ .

**64. C** — The rule is a combined operation: "multiply by 2, then subtract 3." First pair ( $3 \times 2 - 3 = 3$ ), second pair ( $4 \times 2 - 3 = 5$ ), so  $5 \times 2 - 3 = 7$ .

**65. B** — The rule is a combined operation: "multiply by 3, then subtract 2." First pair ( $2 \times 3 - 2 = 4$ ), second pair ( $3 \times 3 - 2 = 7$ ), so  $4 \times 3 - 2 = 10$ .

**66. A** — The rule is "cube the input" (raise to the third power). First pair ( $1^3 = 1$ ), second pair ( $2^3 = 8$ ), so  $3^3 = 27$ . Each output is the input multiplied by itself three times.

**67. B** — The rule is a combined operation: "multiply by 4, then add 2." First pair ( $1 \times 4 + 2 = 6$ ), second pair ( $2 \times 4 + 2 = 10$ ), so  $3 \times 4 + 2 = 14$ .

**68. D** — The rule is a combined operation: "multiply by 5, then subtract 1." First pair ( $1 \times 5 - 1 = 4$ ), second pair ( $2 \times 5 - 1 = 9$ ), so  $3 \times 5 - 1 = 14$ .

**69. C** — The rule is a combined operation: "multiply by 5, then add 1." First pair ( $1 \times 5 + 1 = 6$ ), second pair ( $2 \times 5 + 1 = 11$ ), so  $3 \times 5 + 1 = 16$ .

**70. A** — The rule is a combined operation: "multiply by 2, then add 4." First pair ( $1 \times 2 + 4 = 6$ ), second pair ( $2 \times 2 + 4 = 8$ ), so  $3 \times 2 + 4 = 10$ .

**71. C** — The rule is "multiply by 10." First pair ( $3 \times 10 = 30$ ), second pair ( $4 \times 10 = 40$ ), so  $5 \times 10 = 50$ .

**72. A** — The rule is "multiply by 6." First pair ( $2 \times 6 = 12$ ), second pair ( $3 \times 6 = 18$ ), so  $5 \times 6 = 30$ .

**73. D** — The rule is a combined operation: "multiply by 3, then add 4." First pair ( $1 \times 3 + 4 = 7$ ), second pair ( $2 \times 3 + 4 = 10$ ), so  $3 \times 3 + 4 = 13$ .

**74. A** — The rule is "divide by 9." First pair ( $18 \div 9 = 2$ ), second pair ( $27 \div 9 = 3$ ), so  $45 \div 9 = 5$ .

**75. B** — The rule is "multiply by 11." First pair ( $1 \times 11 = 11$ ), second pair ( $2 \times 11 = 22$ ), so  $3 \times 11 = 33$ .

**76. D** — The rule is a combined operation: "multiply by 4, then add 3." First pair ( $1 \times 4 + 3 = 7$ ), second pair ( $2 \times 4 + 3 = 11$ ), so  $3 \times 4 + 3 = 15$ .

## Number Puzzles

**77. A** — Subtract 18 from both sides:  $? = 33 - 18 = 15$ . Substituting confirms  $15 + 18 = 33$ .

**78. D** — Divide both sides by 9:  $? = 63 \div 9 = 7$ . Substituting confirms  $9 \times 7 = 63$ .

**79. A** — Add 14 to both sides:  $? = 12 + 14 = 26$ . Substituting confirms  $26 - 14 = 12$ .

**80. D** — Rearrange: if  $48 \div ? = 8$ , then  $? = 48 \div 8 = 6$ . Substituting confirms  $48 \div 6 = 8$ .

**81. C** — Divide both sides by 7:  $? = 42 \div 7 = 6$ . Substituting confirms  $7 \times 6 = 42$ .

**82. A** — Subtract 25 from both sides:  $? = 42 - 25 = 17$ . Substituting confirms  $17 + 25 = 42$ .

**83. C** — Rearrange: if  $90 - ? = 37$ , then  $? = 90 - 37 = 53$ . Substituting confirms  $90 - 53 = 37$ .

**84. B** — Divide both sides by 11:  $? = 66 \div 11 = 6$ . Substituting confirms  $6 \times 11 = 66$ .

**85. D** — Combine the known numbers first:  $15 + 8 = 23$ . Then  $23 + ? = 35$ , so  $? = 35 - 23 = 12$ .

- 86. A** — Multiply both sides by 6:  $? = 9 \times 6 = 54$ . Substituting confirms  $54 \div 6 = 9$ .
- 87. D** — Subtract 5 from both sides first:  $9 \times ? = 45$ . Then divide by 9:  $? = 45 \div 9 = 5$ . Substituting confirms  $9 \times 5 + 5 = 50$ .
- 88. A** — Subtract 34 from both sides:  $? = 50 - 34 = 16$ . Substituting confirms  $16 + 34 = 50$ .
- 89. B** — Rearrange: if  $84 \div ? = 12$ , then  $? = 84 \div 12 = 7$ . Substituting confirms  $84 \div 7 = 12$ .
- 90. A** — Add 19 to both sides:  $? = 11 + 19 = 30$ . Substituting confirms  $30 - 19 = 11$ .
- 91. D** — Divide both sides by 12:  $? = 60 \div 12 = 5$ . Substituting confirms  $12 \times 5 = 60$ .
- 92. B** — Subtract 38 from both sides:  $? = 70 - 38 = 32$ . Substituting confirms  $32 + 38 = 70$ .
- 93. A** — Rearrange: if  $64 \div ? = 8$ , then  $? = 64 \div 8 = 8$ . Substituting confirms  $64 \div 8 = 8$ .
- 94. C** — Subtract 3 from both sides first:  $11 \times ? = 44$ . Then divide by 11:  $? = 44 \div 11 = 4$ . Substituting confirms  $11 \times 4 + 3 = 47$ .
- 95. B** — Add 22 to both sides:  $? = 15 + 22 = 37$ . Substituting confirms  $37 - 22 = 15$ .

## Number Series

- 96. D** — The rule is "add 9" each step ( $6 \rightarrow 15 \rightarrow 24 \rightarrow 33$ ). Applying gives  $33 + 9 = 42$ .
- 97. A** — The rule is "subtract 7" each step ( $70 \rightarrow 63 \rightarrow 56 \rightarrow 49$ ). Applying gives  $49 - 7 = 42$ .
- 98. C** — The rule is "multiply by 3" each step ( $2 \rightarrow 6 \rightarrow 18 \rightarrow 54$ , tripling). Applying gives  $54 \times 3 = 162$ .
- 99. B** — The rule is "add 10" each step ( $8 \rightarrow 18 \rightarrow 28 \rightarrow 38$ ). Applying gives  $38 + 10 = 48$ .
- 100. D** — The rule is "perfect cubes" — each term is  $n^3$  for  $n = 1, 2, 3, 4$  (giving 1, 8, 27, 64). The next term is  $5^3 = 125$ .
- 101. C** — The rule is "subtract 12" each step ( $120 \rightarrow 108 \rightarrow 96 \rightarrow 84$ ). Applying gives  $84 - 12 = 72$ .
- 102. A** — The rule is "triangular numbers" — gaps grow by 1 each step (1, 3, 6, 10, 15, with gaps of 2, 3, 4, 5). The next gap is 6, so  $15 + 6 = 21$ .
- 103. B** — The rule is an alternating pattern: odd-position values (2, 4, 6) increase by 2, and even-position values (9, 8, 7) decrease by 1. The next term is in an odd position, so  $6 + 2 = 8$ .
- 104. D** — The rule is a growing gap — gaps increase by 2 each step ( $3 \rightarrow 5 \rightarrow 9 \rightarrow 15 \rightarrow 23$ , with gaps of 2, 4, 6, 8, then 10). Applying gives  $23 + 10 = 33$ .

- 105. C** — The rule is "add 13" each step ( $7 \rightarrow 20 \rightarrow 33 \rightarrow 46$ ). Applying gives  $46 + 13 = 59$ .
- 106. D** — The rule is "divide by 2" each step ( $128 \rightarrow 64 \rightarrow 32 \rightarrow 16$ , halving). Applying gives  $16 \div 2 = 8$ .
- 107. A** — The rule is "add 15" each step ( $10 \rightarrow 25 \rightarrow 40 \rightarrow 55$ ). Applying gives  $55 + 15 = 70$ .
- 108. C** — The rule is a combined operation: "multiply by 2, then add 1" ( $1 \times 2 + 1 = 3$ ,  $3 \times 2 + 1 = 7$ ,  $7 \times 2 + 1 = 15$ ,  $15 \times 2 + 1 = 31$ ). Applying gives  $31 \times 2 + 1 = 63$ .
- 109. A** — The rule is the Fibonacci pattern — each term is the sum of the two previous terms ( $1 + 4 = 5$ ,  $4 + 5 = 9$ ,  $5 + 9 = 14$ , so  $9 + 14 = 23$ ).
- 110. B** — The rule is an alternating pattern: odd-position values (1, 2, 3) increase by 1, and even-position values (10, 9, 8) decrease by 1. The next term is in an odd position, so  $3 + 1 = 4$ .
- 111. A** — The rule is "subtract 8" each step ( $80 \rightarrow 72 \rightarrow 64 \rightarrow 56$ ). Applying gives  $56 - 8 = 48$ .
- 112. C** — The rule is "powers of 2" (doubling each step:  $2 \rightarrow 4 \rightarrow 8 \rightarrow 16 \rightarrow 32$ ). Applying gives  $32 \times 2 = 64$ .
- 113. A** — The rule is "multiply by 4" each step ( $1 \rightarrow 4 \rightarrow 16 \rightarrow 64$ ). Applying gives  $64 \times 4 = 256$ .
- 114. C** — The rule is "perfect squares" — each term is  $n^2$  for  $n = 1, 2, 3, 4, 5$  (giving 1, 4, 9, 16, 25). The next term is  $6^2 = 36$ .

## Figure Matrices

- 115. D** — The transformation is reflection across a horizontal axis (vertical flip — top-to-bottom). The upright house becomes upside-down, so the upright letter K must also flip vertically, producing an upside-down K with diagonal strokes extending toward the lower-right corners.
- 116. B** — The transformation is "add a single diagonal line through the middle." The plain square gains a diagonal line, so the plain circle must also gain a diagonal line through its middle in the same direction.
- 117. C** — The transformation is "double the number of horizontal stripes" (2 to 4). The square with 2 stripes becomes a square with 4 stripes, so the triangle with 2 stripes must become a triangle with 4 stripes.
- 118. A** — The transformation combines two changes: 90-degree clockwise rotation AND outlined-to-solid fill. The outlined upward arrow becomes a solid rightward arrow, so the outlined upright T must rotate 90 degrees clockwise AND become solid black.
- 119. D** — The transformation is size reduction. The large pentagon becomes a small pentagon, so the large star must become a small star. The shape and fill stay; only the size shrinks.

**120. B** — The transformation is fill inversion (solid black to outlined, or outlined to solid). The solid hexagon becomes outlined, so the outlined diamond must become solid black. Each shape's fill is reversed.

**121. C** — The transformation is "change the interior element from a dot to a star." The square with a dot becomes a square with a star, so the circle with a dot must become a circle with a star inside.

**122. B** — The transformation is 90-degree counter-clockwise rotation. The rightward arrow becomes an upward arrow, so the downward arrow must rotate 90 degrees counter-clockwise to become a rightward arrow.

**123. D** — The transformation is "add a dot near the top of the interior." The plain circle gains a dot near the top, so the plain triangle must also gain a dot near the top of its interior.

**124. C** — The transformation is "rotate the stripe direction 90 degrees" (horizontal to vertical or vice versa). The hexagon with horizontal stripes becomes a hexagon with vertical stripes, so the pentagon with vertical stripes must become a pentagon with horizontal stripes.

**125. A** — The transformation is 180-degree rotation (half-turn). The upward triangle becomes a downward triangle, so the leftward arrow must rotate 180 degrees to become a rightward arrow.

**126. D** — The transformation is "double the number of interior elements" (2 to 4). The square with 2 dots becomes a square with 4 dots, so the circle with 2 stars must become a circle with 4 stars.

**127. B** — The transformation combines two changes: 180-degree rotation AND solid-to-outlined fill. The solid upward arrow becomes an outlined downward arrow, so the solid upward hand must rotate 180 degrees AND become outlined, producing an outlined downward hand.

**128. C** — The transformation is reflection across a vertical axis (left-right mirror). The letter R becomes a backwards R, so the letter K must mirror to become a backwards K with the vertical stroke on the right and diagonals on the left.

**129. B** — The transformation is "remove two interior elements" (3 down to 1). The circle with 3 dots becomes a circle with 1 dot, so the square with 3 stars must become a square with only 1 star.

**130. D** — The transformation is "add a smaller copy of the same shape inside." The large circle gains a smaller circle inside, so the large hexagon must gain a smaller hexagon inside.

**131. A** — The transformation is 90-degree clockwise rotation (point-up to point-right). The pentagon pointing up becomes a pentagon pointing right, so the triangle pointing up must rotate 90 degrees clockwise to point right.

**132. D** — The transformation is "increase the stripe count by one" (2 to 3). The triangle with 2 stripes becomes a triangle with 3 stripes, so the hexagon with 2 stripes must become a hexagon with 3 stripes.

**133. C** — The transformation combines two changes: 90-degree counter-clockwise rotation AND solid-to-outlined fill. The solid downward arrow becomes an outlined rightward arrow, so the solid upward arrow must rotate 90 degrees counter-clockwise (becoming leftward) AND become outlined.

## Figure Classification

**134. A** — The category rule is "arrows pointing in some direction." All three given figures are arrows, and the leftward-pointing arrow also qualifies. A plain line, triangle, and star are not arrows.

**135. D** — The category rule is "quadrilaterals" (four-sided polygons). Square, rectangle, parallelogram, and rhombus all have four straight sides. Triangle has 3, pentagon has 5, and hexagon has 6.

**136. B** — The category rule is "shapes with curved boundaries only" (no straight sides). Circle, oval, crescent, and ring all consist of curves. Square, triangle, and pentagon all have straight sides.

**137. D** — The category rule is "shapes filled with diagonal stripes running from upper-left to lower-right." All three given figures share this specific stripe direction, and the pentagon with the same diagonal stripes matches. Plain, solid black, and vertical-striped versions all fail.

**138. A** — The category rule is "outlined shapes with a single dot at the exact centre." All three given figures match this positional rule, and the pentagon with a centre dot also fits. Corner dots, no dot, and multiple dots all fail.

**139. D** — The category rule is "small shapes." All three given figures are notably small, and the small pentagon matches their scale. Large, medium, and very large fail the size requirement.

**140. B** — The category rule is "shapes that point or face leftward." Arrow, triangle, and hand pointing left all match, and the fish facing left also qualifies. Arrow rightward, upward, and the directionless circle all fail.

**141. D** — The category rule is "plain outlined shapes with empty interiors." All three given figures are plain outlines, and the plain outlined pentagon matches. Solid, striped, and dotted-fill versions all fail.

**142. B** — The category rule is "shapes filled with vertical stripes." All three given figures share vertical-stripe fills, and the pentagon with vertical stripes matches. Horizontal stripes, solid black, and plain outline all fail.

**143. D** — The category rule is "outlined shapes containing a small star inside." All three given figures match, and the pentagon with a star inside also fits. Plain, circle-inside, and X-inside versions all fail.

**144. A** — The category rule is "six-sided shapes" (hexagons). All three given figures are hexagons varying in fill or size, and a hexagon at a different angle is still six-sided. Pentagon has 5, octagon has 8, and square has 4.

**145. D** — The category rule is "outlined shapes with a single horizontal line through the middle." All three given figures match, and the pentagon with a horizontal line also fits. Plain, diagonal, and vertical-line versions all fail.

**146. B** — The category rule is "shapes with the top half solid black and the bottom half white." All three given figures share this pattern, and the pentagon with top-half-black matches. Plain, fully solid, and bottom-half-black versions all fail.

**147. A** — The category rule is "outlined shapes with a black X mark inside." All three given figures match, and the pentagon with an X inside also fits. Plain, X-alone, and dot-inside versions all fail.

**148. B** — The category rule is "shapes with thin (normal-weight) borders." All three given figures share thin outlines, and the thin-bordered pentagon matches. Thick-bordered, solid, and striped versions all fail.

**149. D** — The category rule is "outlined shapes containing a smaller copy of the same shape inside." All three given figures share this self-nested pattern, and the pentagon-within-a-pentagon matches. Plain, star-inside, and triangle-inside all fail.

**150. B** — The category rule is "shapes that point or face rightward." Arrow, hand, and triangle pointing right all match, and the fish facing right also qualifies. Arrow upward, the directionless circle, and arrow leftward all fail.

**151. C** — The category rule is "outlined shapes with a single dot in the upper-right interior." All three given figures match this positional rule, and the pentagon with a dot in upper-right also fits. Different dot positions all fail.

**152. B** — The category rule is "large shapes." All three given figures are notably large, and the large pentagon matches their scale. Small, medium, and very small fail the size requirement.

## **Paper Folding**

**153. C** — A single vertical fold creates two layers. A hole near the lower-left corner of the folded shape (at the original paper's lower-left corner) mirrors across the vertical fold to a matching hole at the lower-right corner. The result is two holes on the bottom edge of the paper.

**154. A** — A single horizontal fold creates two layers. A hole at the centre of the folded top half (midway left-to-right) sits on the vertical centerline. The hole mirrors across the horizontal fold to a matching point in the lower half, producing two holes on the vertical centerline.

**155. D** — A double fold creates four layers. A hole near the centre of the folded lower-left quadrant mirrors across both fold lines, producing one hole near the centre of each of the four quadrants of the paper.

**156. B** — A hole punched exactly on the vertical fold line returns the same point when mirrored across that fold. Punching at the top of the fold line places the hole on the top edge of the paper at the vertical middle, so only one hole appears.

**157. D** — A diagonal fold from top-left to bottom-right mirrors the punch across the diagonal. A hole in the middle of the folded triangle (the lower-left interior, away from the fold) produces a second hole in the upper-right interior, symmetric across the diagonal.

**158. B** — A single horizontal fold creates two layers. A hole near the lower-right corner of the folded bottom half sits at the original paper's lower-right corner, and its mirror across the horizontal fold sits at the upper-right corner. The result is two holes on the right edge.

**159. A** — A hole punched exactly on the diagonal fold edge returns the same point when mirrored across the diagonal. Punching at the middle of the diagonal places the hole at the centre of the paper, on the diagonal, so only one hole appears.

**160. C** — A hole punched at the intersection of both fold lines sits at the centre of the original paper. The hole is on both fold lines, so all four layers' mirror positions converge to the same single point. Only one hole appears at the very centre.

**161. B** — A single vertical fold mirrors each punch across the fold line. Two holes near the upper-left and lower-left corners of the folded left half (the original paper's upper-left and lower-left corners) each mirror across the fold to the upper-right and lower-right corners. The result is four holes at the four corners.

**162. D** — A diagonal fold from top-right to bottom-left mirrors the punch across the diagonal. A hole near the bottom-right corner of the original paper produces a mirror hole at the top-left corner, the two corners that lie on opposite sides of the diagonal.

**163. A** — A hole punched exactly on the horizontal fold line returns the same point when mirrored across that fold. Punching at the midpoint of the fold (midway left to right) places the hole at the centre of the paper, so only one hole appears.

**164. B** — A single vertical fold mirrors each punch across the fold line. Two holes close to the fold (one near the top, one near the bottom) each produce a mirror very close on the opposite side. The result is four holes near the vertical centerline — two pairs straddling the middle.

**165. D** — A single horizontal fold creates two layers. A hole near the lower-left corner of the folded bottom half sits at the original paper's lower-left corner, and its mirror across the horizontal fold sits at the upper-left corner. The result is two holes on the left edge.

**166. A** — A hole punched exactly on the diagonal fold edge returns the same point when mirrored across the diagonal. Punching at the middle of the diagonal places the hole at the very centre of the paper, so only one hole appears.

**167. B** — A double fold creates four layers. A hole near the lower-right corner of the folded shape (at the original paper's lower-right corner, far from both fold lines) mirrors across both fold axes, producing one hole at each of the four corners of the paper.

**168. D** — A single vertical fold creates two layers. A hole near the upper-right corner of the folded right half sits at the original paper's upper-right corner, and its mirror across the vertical fold sits at the upper-left corner. The result is two holes on the top edge.

**169. A** — A diagonal fold from bottom-left to top-right mirrors the punch across the diagonal. A hole in the middle of the folded triangle (the lower-right interior, away from the fold) produces a second hole in the upper-left interior, symmetric across the diagonal.

**170. D** — A double fold creates four layers. A hole near the upper-left corner of the folded shape (at the original paper's upper-left corner, far from both fold lines) mirrors across both fold axes, producing one hole at each of the four corners of the paper.