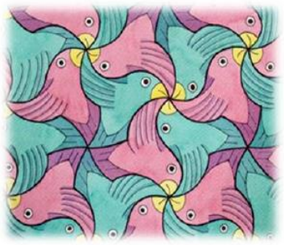
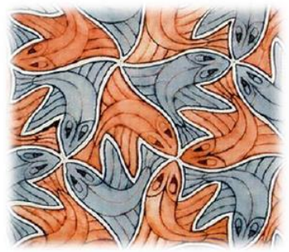
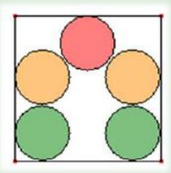
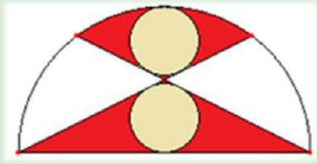
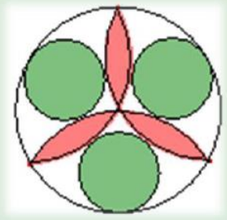
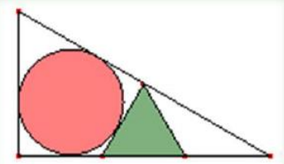
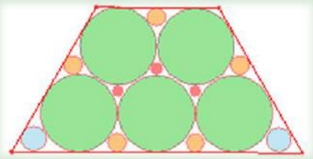
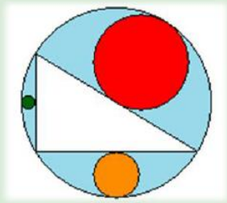
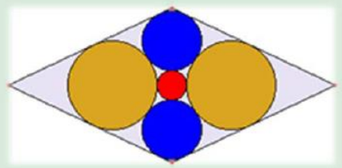
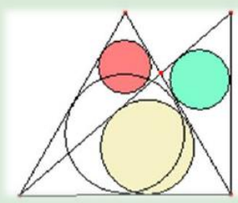
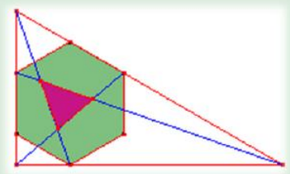
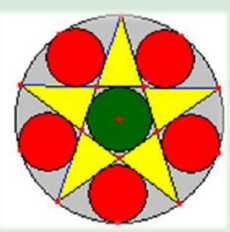
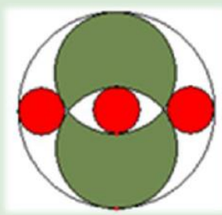
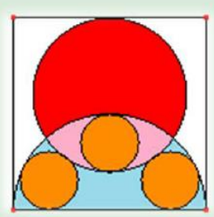
APRIL

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	U
						**1**  Five equal circumferences, of radius r are inside a square of side c. Calculate r / c. *Hyogo headquarters*	**2**
	3 Two equal circles have been inscribed in a semicircle of radius R (see figure). Calculate the radius of the circumferences. *Aichi Headquarters*	**4** 	**5** A right triangle is inscribed in a circle. Three circles tangent to the previous circle and to the sides of the triangle have been drawn. Let r_1, r_2 be the radii of the circles tangent to the legs. Let R be the radius of the circle tangent to the hypotenuse. Determine the relation between the three radii. *Nagasaki Headquarters*	**6** 	**7** The small leg of the right triangle is c. Calculate the radius of the circumference and the side of the equilateral triangle. *Headquarters Ehime*	**8** 	**9**
	10 	**11** The radius of the five green circles tangent to the sides of the trapezoid is r, calculate the radius of the other three types of circles. *Gunma Headquarters*	**12** 	**13** In the figure, the three green circles are equal and each one is tangent to an exterior circle and to two arcs. Determine the ratio between the radii of the two types of circles. *Yamagata Headquarters*	**14** 	**15** Four circles of radii R and r are tangent to the sides of a rhombus. A fifth circle of radius s is tangent to the previous four. Calculate the value of the radius R based on the radii r and s *Nagano Chiefdom*	**16**
	17 Calculate the ratio between the sum of the areas of the six equal circles tangent to twelve equal arcs of circumference and the area of the outer circle. *Nagasaki Headquarters*	**18** 	**19** In the figure the side of the equilateral triangle is 1. The right triangle has the vertical leg equal to the height of the equilateral triangle. Calculate the radii of the three shaded circles. *Yamagata Headquarters*	**20** 	**21** A regular hexagon has been inscribed in a right triangle (see figure). Calculate the ratio of proportionality of their areas. The vertices of the right triangle have been joined with the vertices of the regular hexagon. Calculate the ratio between the areas of the triangle and the regular hexagon. *Iwate Headquarters*	**22** 	**23**
	24 	**25** Five circles have been drawn in a circumference. The three equal red ones and the other two equal and interior tangents. Calculate the ratio between the radii. *Hyogo Headquarters*	**26** 	**27** Given a square of side 2a we draw a semicircle on the lower side as diameter. We construct a circle of radius R with centre at the perpendicular bisector of the diameter of the semicircle and tangent to the upper side. Three circles of radius r are tangent to the semicircle and to the previous circle. Calculate the ratio between the radii of the two types of circumference. *Iwate Headquarters.*	**28** 	**29** Consider the regular stellated pentagon and its inscribed circle of radius r. Let the five circles be tangent, of radius s, to the regular star pentagon and to its circumscribed circle. Calculate the ratio: s/r *Nagano Chiefdom*	**30**