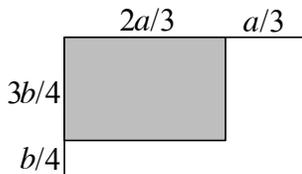
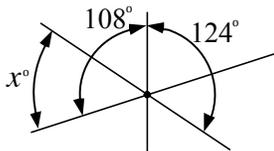


1. How many metres are in 1.6 km? _____ (m) 1
2. Round 1.6×4.7 to the nearest whole number. _____ 2
3. The large rectangle in the figure below has sides a and b .
 What fraction of the large rectangle is shaded?



4. Express the product as a common fraction: $\frac{1}{3} \times \frac{9-2}{6-1} \times \frac{9+2}{7-1}$ _____ 4
5. In 2012, February will have 29 days. It will have 5 Wednesdays.
 On what day of the week is February 14, 2012? _____ 5
6. Ann took 8 tests (marks are out of 100). Her average on the
 first 7 tests was 56. Ann's average increased by 5 marks after
 the 8th test. What was Ann's mark on the 8th test? _____ 6
7. Many of the 204 Canadian athletes who participated in the Winter
 Olympics won medals. In total, 4 Canadians won four medals each,
 6 won three medals each, 16 won two medals each, and 91 won one
 medal each. The rest did not win any medal.
 How many Canadian athletes did not win any medal? _____ 7
8. Let $N = 3^{2010}$. What is the remainder if you divide N by 10? _____ 8
9. The three lines in the figure intersect at a single point. The angles
 between pairs of lines are shown. What is the value (in degrees) of x ?

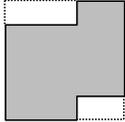


_____ (°) 9

10. The regular price of a calculator is \$9.95. Dan bought 4 calculators and got a 5% discount. How much did Dan pay (in dollars) for the 4 calculators? Give your answer in decimal form. _____ (\$)

11. What is the sum of all the prime factors of 2010? _____

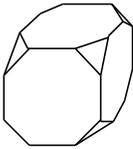
12. Rectangles are cut out at two corners of a square as shown. The perimeter of the shaded region is 20. Find the area of the square.



_____ 12

13. Suppose that -4 and -22 are the fourth and seventh terms (respectively) of an arithmetic progression. What is the value of the first term of this progression? _____

14. Nick sawed off all vertices of a wooden cube (see figure). How many edges does the new solid have?



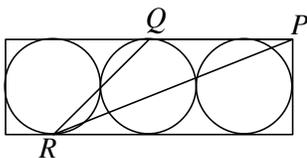
_____ 14

15. The sum of 6 consecutive positive odd numbers is 192. What is the value of the largest of these numbers? _____

16. N is the product of three different prime numbers. How many positive factors does N have? Note that 1 and N are factors of N . _____

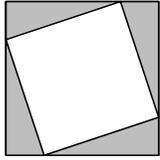
17. A farmer has enough oats to feed her horses for 30 days. If she had 10 more horses, the oats would only be enough for 20 days. How many horses does the farmer have? _____

18. Three circles, each with area 72π , are inscribed in a rectangle as in the figure below. Point P is a corner of the rectangle, and points Q and R are points of tangency. Find the length of QR .



_____ 18

19. The outer square of the left figure has sides 5. Each of the four shaded right-angled triangles has legs 1 and 4. The shaded triangles are placed at the corners of the rectangle on the right. What is the area of the inner (unshaded) rhombus on the right?



_____ 19

20. A perfect square is a number like $0 = 0^2$, $1 = 1^2$, $4 = 2^2$, $9 = 3^2$, or $16 = 4^2$.

Find the value of the largest perfect square smaller than 2010.

_____ 20

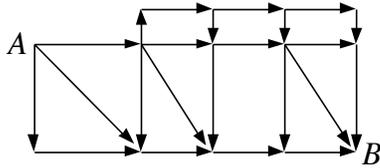
21. Two athletes, A and B, competed in the 3000 metre speed skating race at the Richmond Olympic Oval. When A finished, B was still 144 metres from the finish line. If A finished the entire race in 288 seconds, what was the average speed of B (in metres per minute) over these 288 seconds?

_____ (m/min) 21

22. How many 5-digit whole numbers have digit sum equal to 3?

_____ 22

23. The line segments represent one-way streets. One can only travel in the direction of the arrows. How many paths are there from A to B?

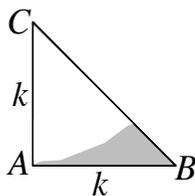


_____ 23

24. Define $x \nabla y = (x+1)(y-1)$. What is the value of $(1 \nabla 3) \nabla (2 \nabla 2)$?

_____ 24

25. The right triangle ABC is isosceles, where $AB = AC = k$, and k is an integer. The shaded region is bounded by two sides of the triangle and by an arc of a circle with radius k and centre at C . The area of the shaded region, when rounded to the nearest whole number is 13. Find the value of k . (Hint: Find an expression for the shaded area in terms of k .)



_____ 25

26. You roll three dice, and are told that one or more of the dice shows a 1. Given this information, what is the probability that the sum of the three numbers you rolled is 3? (Hint: Find how many ways there are to roll so that one or more dice shows a 1.)

_____ 26