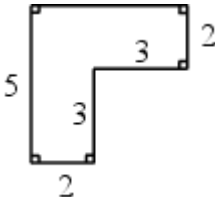


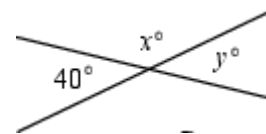


The CENTRE for EDUCATION
in MATHEMATICS and COMPUTING

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- The numbers 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 are written on separate cards and placed face down on a table. A card is chosen at random and flipped over. What is the probability that the number on this card is a prime number?
(A) $\frac{2}{11}$ (B) $\frac{4}{11}$ (C) $\frac{6}{11}$ (D) $\frac{3}{11}$ (E) $\frac{5}{11}$
- The time on a digital clock is 10:25. In minutes, what is the shortest length of time until all the digits on the clock will be equal to one another?
(A) **36** (B) **107** (C) **86** (D) **46** (E) **187**
- The value of $(1 + 2)^2 - (1^2 + 2^2)$ is
(A) **14** (B) **4** (C) **2** (D) **12** (E) **1**
- The measure of one angle of an isosceles triangle is 50° . The measures of the other angles in this triangle could be
(A) **50° and 90°** (B) **40° and 50°** (C) **50° and 80°**
(D) **30° and 100°** (E) **60° and 70°**
- Bailey scores on six of her eight shots. The percentage of shots that she *does not* score on is
(A) **2** (B) **40** (C) **10** (D) **20** (E) **25**
- A cube having the digits 1, 2, 3, 4, 5, 6 on its six faces is tossed. What is the probability that the number on the top face is 5 or 6?
(A) $\frac{5}{6}$ (B) $\frac{1}{5}$ (C) $\frac{1}{3}$ (D) $\frac{11}{36}$ (E) $\frac{2}{5}$
- The perimeter of the figure shown is
(A) **18** (B) **17** (C) **23**
(D) **20** (E) **25**

- The number 10 101 is equal to
(A) $1000 + 100 + 1$ (B) $1000 + 10 + 1$ (C) $10\ 000 + 10 + 1$
(D) $10\ 000 + 100 + 1$ (E) $100\ 000 + 100 + 1$
- The value of $444 - 44 - 4$ is
(A) **396** (B) **402** (C) **392** (D) **400** (E) **408**
- A class begins at 8:30 a.m. and ends at 9:05 a.m. on the same day. In minutes, what is the length of the class?
(A) 15 (B) 25 (C) 35 (D) 45 (E) 75
- The volume of a rectangular prism is 30 cm^3 . The length of the prism is doubled, the width is tripled, and the height is divided by four. The volume of the new prism is
(A) **31 cm^3** (B) **120 cm^3** (C) **60 cm^3** (D) **90 cm^3** (E) **45 cm^3**

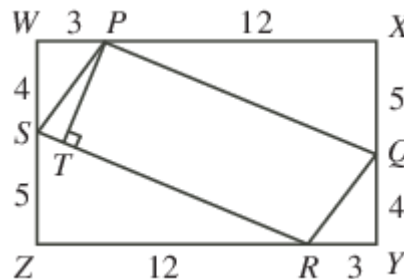
12. The Summer Olympics are held once every 4 years. During an 18 year period, what is the largest number of Summer Olympics that could be held?
 (A) 3 (B) 4 (C) 5 (D) 6 (E) 7
13. The mean (average) height of a group of children would be increased by 6 cm if 12 of the children in the group were each 8 cm taller. How many children are in the group?
 (A) 16 (B) 14 (C) 21 (D) 26 (E) 9
14. On a science test, Janine got 80% of the 10 multiple choice questions correct and 70% of the 30 short answer questions correct. What percentage of the 40 questions on the test did she answer correctly?
 (A) 74% (B) 72.5% (C) 76% (D) 73% (E) 73.5%
15. A cube has a surface area of 54 cm^2 . The volume of the cube, in cm^3 , is
 (A) 81 (B) 343 (C) 18 (D) 27 (E) 729
16. Dalia's birthday is on a Wednesday and Bruce's birthday is 60 days after Dalia's. On what day of the week is Bruce's birthday?
 (A) Monday (B) Tuesday (C) Friday (D) Saturday (E) Sunday
17. Beatrix is twice the height of Violet, and Violet is $\frac{2}{3}$ the height of Georgia. What fraction of Georgia's height is Beatrix's height?
 (A) $\frac{9}{7}$ (B) $\frac{2}{3}$ (C) $\frac{4}{3}$ (D) $\frac{5}{4}$ (E) $\frac{3}{2}$
18. Ahmed chooses two different items for a snack. His choices are an apple, an orange, a banana, and a granola bar. How many different pairs of snacks could he choose?
 (A) 3 (B) 4 (C) 5 (D) 6 (E) 7
19. The number that goes into the \square to make $\frac{3}{7} = \frac{\square}{63}$ true is
 (A) 27 (B) 9 (C) 59 (D) 63 (E) 3
20. If two straight lines intersect as shown, then $x - y$ is
 (A) 0 (B) 40 (C) 80
 (D) 60 (E) 100



21. The figure consists of 8 identical small parallelograms, joined as shown. Including these 8 small parallelograms, how many parallelograms appear in this figure?
 (A) 29 (B) 30 (C) 26
 (D) 27 (E) 28



22. In the rectangle $WXYZ$, the parallelogram $PQRS$ is formed as shown. The segment PT is perpendicular to SR . The length of ST is
 (A) $\frac{13}{12}$ (B) $\frac{13}{5}$ (C) $\frac{12}{13}$
 (D) $\frac{16}{13}$
 (E) 1



23. Chantelle had two candles, one of which was 32 cm longer than the other. She lit the longer one at 3 p.m. and lit the shorter one at 7 p.m. At 9 p.m., they were both the same length. The longer one was completely burned out at 10 p.m. and the shorter one was completely burned at midnight. The two candles burned at different, but constant, rates. What was the sum of the original lengths of the two candles?
- (A) **42 cm** (B) **48 cm** (C) **60 cm** (D) **80 cm** (E) **52 cm**

24. Daryl first writes the perfect squares as a sequence

1, 4, 9, 16, 25, 36, 49, 64, 81, 100, ...

After the number 1, he then alternates by making two terms negative followed by leaving two terms positive. Daryl's new sequence is

1, -4, -9, 16, 25, -36, -49, 64, 81, -100, ...

What is the sum of the first 2011 terms in this new sequence?

- (A) **-4 042 109** (B) **-4 047 638** (C) **-4 038 094**
(D) **-4 044 121** (E) **-4 046 132**
25. A bicycle travels at a constant speed of 15 km/h. A bus starts 195 km behind the bicycle and catches up to the bicycle in 3 hours. What is the average speed of the bus in km/h?
- (A) **65** (B) **80** (C) **70** (D) **60** (E) **50**