

X1 score

1

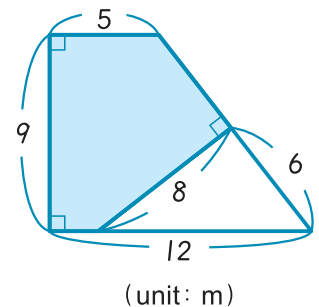
- (c) Which description is **wrong** ?
- (a) A popsicle is 15 cents. Anna buys x popsicles. She needs to pay $15x$ cents.
- (b) Tammy had 600 dollars. She bought a skirt that cost x dollars. She has $(600 - x)$ dollars left.
- (c) A red ribbon is 24 cm, which is shorter than a yellow ribbon by x cm. The yellow ribbon is $(24 - x)$ cm long.
- (d) There are x number of roses. Every 6 roses can be tied into one bouquet. There can be $(x \div 6)$ bouquets.
- (e) A rectangle is x cm long and 20 cm wide. Its perimeter is $(40 + 2x)$ cm.

X2 score

2

- (a) Mr. Wang has a garden with an area like the diagram below. He plants roses in the blue part of the garden. What is the total area filled with roses?

- (a) 52.5 (b) 28.5 (c) 5.25
(d) 2.85 (e) 0.525 m^2



X3 score

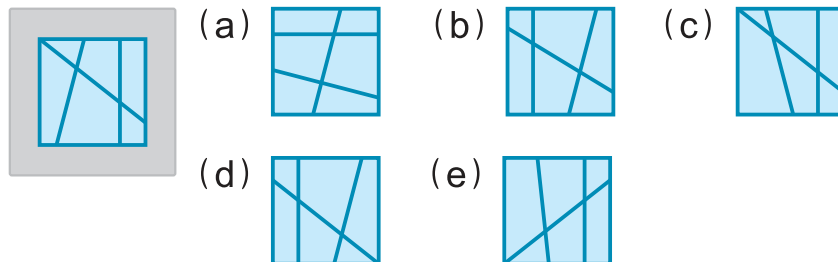
3

- (d) A bag of candy originally costs \$50, and its market price is 60% more. If there is a discount of 20%, what's the final price now?
- (a) \$24 (b) \$34 (c) \$40 (d) \$64 (e) \$80

X4 score

4

- (d) Which shape is a rotation of the image on the left?



X5 score

5

- (c) If $A > B$, which description is **wrong** ?
- (a) If A is a multiple of 4, then A is a multiple of 2.
- (b) If A is a multiple of 10, then A is a multiple of 5.
- (c) If A is a multiple of 3, then A is a multiple of 6.
- (d) If A and B are multiples of 8, then $A + B$ is also a multiple of 4.
- (e) If A and B are multiples of 6, then $A - B$ is also a multiple of 2.



X6 score

6

- (e) Which of the following statements about line-symmetric figures is **wrong** ?
- (a) A regular pentagon is line-symmetric.
 (b) In a line-symmetric figure, the axis of symmetry is perpendicular to the lines connecting any two symmetric points.
 (c) A circle has an infinite number of axes of symmetry.
 (d) A line-symmetric figure is bisected by the axis-of-symmetry into two figures of equal area.
 (e) A parallelogram has two axes of symmetry.

X7 score

7

- (c) The first bus for the theme park leaves its bus stop at 9:05 A.M. A bus comes every 25 minutes. At 12 P.M., how many buses have left that stop?
 (a) 6 (b) 7 (c) 8 (d) 9 (e) 10

X8 score

8

- (b) The greatest common factor of A and B is 7. If $B > A > 0$ and $A + B = 42$, what is $B - A$?
 (a) 32 (b) 28 (c) 24 (d) 14 (e) 0

X9 score

9

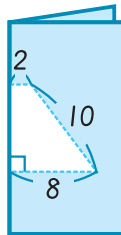
- (b) A bottle can hold $1\frac{3}{8}$ l of juice. If you have $14\frac{2}{3}$ l of juice, how many bottles can you fill? How many liters will you have left?
 (a) 10 bottles, $\frac{2}{3}$ l (b) 10 bottles, $\frac{11}{12}$ l (c) 10 bottles, $\frac{13}{24}$ l
 (d) 11 bottles, $\frac{1}{3}$ l (e) 11 bottles, $\frac{1}{12}$ l

X10 score

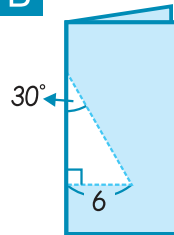
10

- (a) Jack folded the paper in half, and then cut along the dotted line (like the diagrams below). What is the correct order of the shapes from the greatest to the least perimeter?

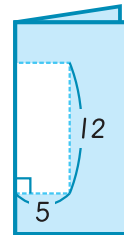
A



B



C



- (a) $C > A > B$ (b) $C > B > A$ (c) $A > B > C$
 (d) $B > A > C$ (e) $A > C > B$



More questions are on the next page.

X11 score

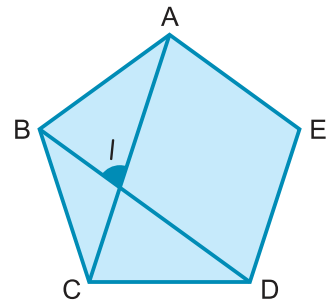
- 11 (c) A and B are both whole numbers, $A \div B = 26 \dots\dots 2$ and $A > B$.
If $A \div 2B = C \dots\dots D$, what is $C + D$?
(a) 28 (b) 27 (c) 15 (d) 14 (e) 13

X12 score

- 12 (e) There are six cards for each number **3**, **5**, **7**, **9**.
Altogether there are 24 cards. Which of the statements is **wrong**?
(a) The product of any two cards is odd.
(b) The sum of any 4 cards is even.
(c) The sum of any 5 cards is odd.
(d) The product of any 7 cards is odd.
(e) The sum of any 10 cards is odd.

X13 score

- 13 (a) ABCDE is a regular pentagon
(like the diagram on the right).
What is $\angle I$?
(a) 72° (b) 64° (c) 56° (d) 48° (e) 36°

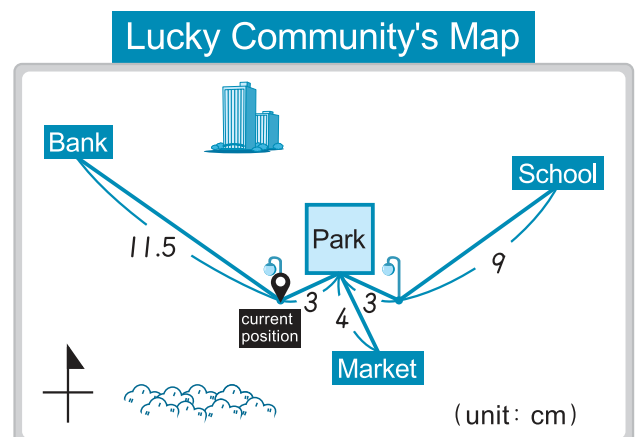


X14 score

- 14 (d) Bob has fewer than 350 bricks. If he lines them up in rows of 9 bricks or rows of 15 bricks, he can use up all the pieces with no leftovers.
What is the greatest number of bricks Bob could have?
(a) 345 (b) 335 (c) 325 (d) 315 (e) 310

X15 score

- 15 (d) The picture on the right shows "Lucky Community". On the map, the distance from the park to the market is 4 cm. The real distance is 3.2 km. Following the paths on the map. What is the real distance from the bank to the park, then to the school (in km)?
(a) 13.2 km (b) 14 km
(c) 19.6 km (d) 21.2 km
(e) 22 km



X16 score

16 (b) If $8 = (x - 3)$, then what is $\left| \frac{1}{x+1} - 1 \right| = ?$

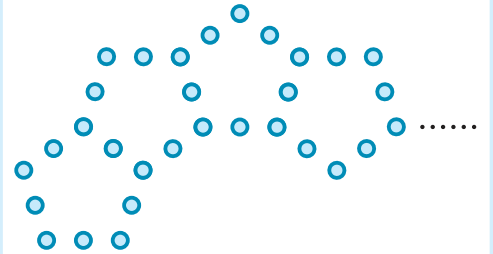
- (a) $\frac{10}{11}$ (b) $\frac{11}{12}$ (c) $-\frac{10}{11}$ (d) $-\frac{11}{12}$ (e) $-\frac{12}{13}$

X17 score

17 (a) Continuing the pattern in figure 1, if there are 25 pentagons made by the circles, how many circles are used?

- (a) 178 (b) 171 (c) 168
(d) 165 (e) 151

figure 1



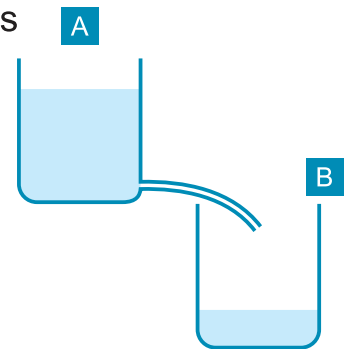
X18 score

18 (d) In the figure on the right, Tank A is holding 3 times as much water as Tank B. If you connect a pipe from Tank A to Tank B, 2.5 l of water will flow to Tank B per minute.

After 4.8 minutes, Tank A will have 3 l left.

How much water does Tank B have then?

- (a) 5 l (b) 12 l (c) 15 l (d) 17 l (e) 20 l



X19 score

19 (d) Ming and 4 friends take the train from Taipei to Hualien.

On the train, they take turns playing on 3 iPads.

If the whole ride takes 2 hours and each iPad can only be used by one person at a time, how much time does each person get to play on the iPad?

- (a) 0.5 hours (b) 0.6 hours (c) 0.75 hours
(d) 1.2 hours (e) 1.5 hours

X20 score

20 (c) $86,400 = 2^7 \times 3^3 \times 5^2$. Which of the following is a factor of 86,400?

- (a) $2^5 \times 3^4$ (b) $3^2 \times 5^3 \times 6$ (c) $2^2 \times 3 \times 5 \times 6 \times 15$
(d) $2^4 \times 3^2 \times 5 \times 6^3$ (e) $2^5 \times 3 \times 8 \times 12$



More questions are on the next page.

X21 score

21

- (a) Amy is making a glass of lemonade. She pours 8 ml of lemon juice into some water. After mixing, the lemon juice is 5% of the mixture. How much water was in the mixture originally?
 (a) 152 ml (b) 160 ml (c) 192 ml (d) 200 ml (e) 210 ml

X22 score

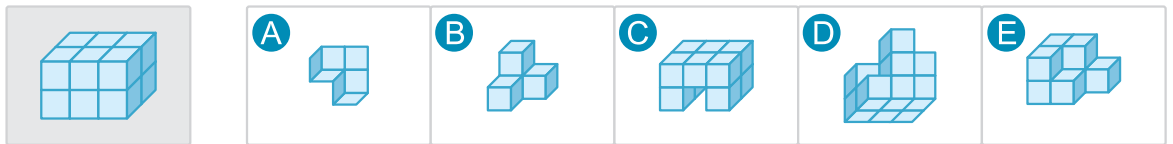
22

- (b) A store manager buys an oven for \$5,600. He marks the market price up by some percentage, and then offers a 20% discount. If he can earn a profit of \$224, how much does he increase the price by?
 (a) 20% (b) 30% (c) 50% (d) 60% (e) 70%

X23 score

23

- (c) Which of the following structures can be combined to form the figure on the left?



- (a) A B (b) B C (c) B E (d) C D (e) D E

X24 score

24

(e) $\frac{144}{100,000} \times \frac{4.5}{4.8 \times 10^{11}} = a$

Which of the following is the scientific notation of a ?

- (a) 1.35×10^{16} (b) 1.35×10^{14} (c) 1.35×10^{-18}
 (d) 1.35×10^{-16} (e) 1.35×10^{-14}

X25 score

25

- (e) In the election, $\frac{1}{2}$ of the voters voted for ①, $\frac{1}{8}$ of the voters voted for ②, $\frac{1}{5}$ of the voters voted for ③, and $\frac{1}{10}$ of the voters voted for ④. The rest of the votes were defective. If we know that there were 450-500 voters in total, how many defective votes could there be?
 (a) 3 (b) 12 (c) 18 (d) 24 (e) 36



X26 score

26

- (c) $a = 5^{162}$, $b = 4^{216}$, $c = 3^{270}$. What's the order of A, B, and C?
 (a) $a > b > c$ (b) $a > c > b$ (c) $b > c > a$ (d) $c > b > a$ (e) $b > a > c$

X27 score

27

- (c) x and y are whole numbers. $x \odot y$ is the sum of their greatest common factor and their least common multiple. For example, $15 \odot 18 = 90 + 3 = 93$. What is $24 \odot 56$?
 (a) 674 (b) 340 (c) 176 (d) 132 (e) 120

X28 score

28

- (b) From question 27, if $12 \odot a = 162$, and $b \odot 72 = 152$, what is $a - b$?
 (a) 50 (b) 62 (c) 70 (d) 94 (e) 110

X29 score

29

- (e) All the edges of a cube add up to 103 cm. If the cube's volume is [A] cm^3 , and the surface area of the cube is [B] cm^2 , what is the ratio of [A : B]?
 (a) $\frac{103}{2}$ (b) $\frac{103}{6}$ (c) $\frac{103}{12}$ (d) $\frac{103}{36}$ (e) $\frac{103}{72}$

X30 score

30

- (d) $\overline{AB} = \overline{BC} = \overline{CD} = \overline{DE}$. If you slice a cone horizontally at point D, as the diagram shows below, what is the difference between the surface areas of X and Y?
 (a) 202.5π (b) 157.5π (c) 145π
 (d) 55π (e) 45π

