

SOLUTIONS: Stage I Question Set 5

Solution to Question #1:

$$2^2 = 4; 4 = 4; 2 + 2 = 4; 8 \div 4 = 2$$

The correct answer is (b) .

Solution to Question #2:

- a) The perimeter of the equilateral triangle is $3 + 3 + 3 = 9\text{m}$, and the perimeter of the side is $2.5 \times 4 = 10\text{m}$. This statement is false.
- b) The rectangle has an area of $2 \times 5 = 10 \text{ m}^2$. The square has an area of $4 \times 4 = 16 \text{ m}^2$. This statement is false.
- c) The rectangle has perimeter of $1 + 8 + 1 + 8 = 18\text{m}$. The square has perimeter of $5 + 5 + 5 + 5 = 20\text{m}$. This statement is false.
- d) All of the above statements are false, so d) is false.
- e) All of the statements are false, so e) is true.

The correct answer is (e) .

Solution to Question #3:

$$5^2 + 4^3 + 1 = 25 + 64 + 1 = 90$$

The correct answer is (b) .

Solution to Question #4:

- a) Timothy's speed was 90 miles/hour, while Susan's speed was $100 \times 6/7 = 85.714$. . . which is approximately 86 miles per hour. This statement is true.
- b) Timothy's average speed was 60 miles/hour. This is False.
- c) Susan's average speed was approximately 86 miles per hour. This is True.
- d) Since both a & c are true, d) is true.
- e) none of the above

The correct answer is (d) .

Solution to Question #5:

- a) $5 \times 0.69 = \$3.45$ for oranges on Tuesday. $4 \times 0.89 = \$3.56$ for oranges on Monday. True.
- b) $3 \times 0.89 = \$2.67$ for oranges on Monday. $4 \times 0.69 = \$2.76$ for oranges on Tuesday. False.
- c) $89 \times 0.69 = 69 \times 0.89$, so the cost of Monday's oranges is the same as Tuesday's oranges.
- d) b is false, so d is false.
- e) Both a & c are true, so e is true.

The correct answer is (e) .

Solution to Question #6:

$$2 + \frac{1}{2} + 0.5 + 3.1 = 2 + 0.5 + 0.5 + 3.1 = 6.1$$

The correct answer is (b) .

Solution to Question #7:

The correct answer is (c) .

Solution to Question #8:

$AC = 6$ units. Since $AC = AB/3$, then $AB = 18$. Therefore B is at 36.

The correct answer is (d) .

Solution to Question #9:

If 46 cm fell in March, then 23 cm will fall in May. The total amount of rainfall in March, April, and May is $46 + 59 + 23 = 128$ cm. The correct answer is (a) .

Solution to Question #10:

The area of the shaded region is $\frac{1}{2}(3)(3) - 1(1) = 4.5 - 1 = 3.5 \text{ m}^2$.
The correct answer is (c) .

Solution to Question #11:

$28 \times 16 = 448$ grams.

The correct answer is (b) .

Solution to Question #12:

The perimeter of the star is $1 \times 10 = 10$ m. To convert that into centimeters, you multiply by 100. $10 \times 100 = 1000$ cm.

The correct answer is (a) .

Solution to Question #13:

$3N \div 2 - 3 = 52$.

$1.5N = 55$

$N = 36 \frac{2}{3}$

The correct answer is (d) .

Solution to Question #14:

b = the younger brother's age; $b + 2$ = the older brother's age

If their father will be 65 in 11 years, he is 54 years old now. $b + b + 2 = 54$; $b = 26$, so the younger brother is 26 and the older brother is 28. In 11 years, when the father retires, the younger brother will be $26 + 11 = 37$ years old.

The correct answer is (a) .

Solution to Question #15:

The area of the smaller circle = $12\pi = \pi r^2$.

$r = \sqrt{12} = 2\sqrt{3}$ The correct answer is (c) .

Solution to Question #16:

a) The ant has a course which is half as long, and it is travelling 3 times as fast as the ladybug. Since both began their courses at the same time, the ladybug will take 6 times as long. This statement is true.

b) False (see a).

c) False (see a).

d) The ant has a shorter course, since $AB = 7$ units, and $CE = 14$.

e) a is true, so e is false.

The correct answer is (a) .

Solution to Question #17:

As shown in the figure, you can divide the polygon into 3 triangles, each of which has angles which sum to 180° . $3 \times 180 = 540$, so the sum of the interior angles of the polygon is 540° .

The correct answer is (b) .

Solution to Question #18:

n = the number of nickels Julie has

$2n$ = the number of dimes Julie has

$4n$ = the number of quarters Julie has

$7n = 70$, so n = the number of nickels = 10.

If Julie has twice as many dimes as nickels, she has 20 dimes, which are worth \$2.

The correct answer is (c) .

Solution to Question #19:

R = the radius of the larger cylinder

$\frac{1}{2}R$ = the radius of the smaller cylinder

H = the height of the larger cylinder

$\frac{1}{2}H$ = the height of the smaller cylinder

V = the volume of the larger cylinder = $\pi R^2 H$

v = the volume of the smaller cylinder = $\pi R^2 H / (4 \times 2) = \pi R^2 H / 8$

$v \div V = 1 \div 8 = 1/8$

The correct answer is (a) .

Solution to Question #20:

- a) If December 3 is a Sunday, so are December 10, December 17, December 24 and December 31. So there are five Sundays in December of that year. This statement is false.
 - b) If December 3 was a Sunday, then November 26 was a Sunday, as were November 19, November 12, and November 5. This statement is true.
 - c) If December 31 is a Sunday, then January 7 is a Sunday, as are January 14, January 21, and January 28. This statement is true.
 - d) Since a is false, d is false.
 - e) Both b and c are true, so e is the correct answer.
- The correct answer is (e) .