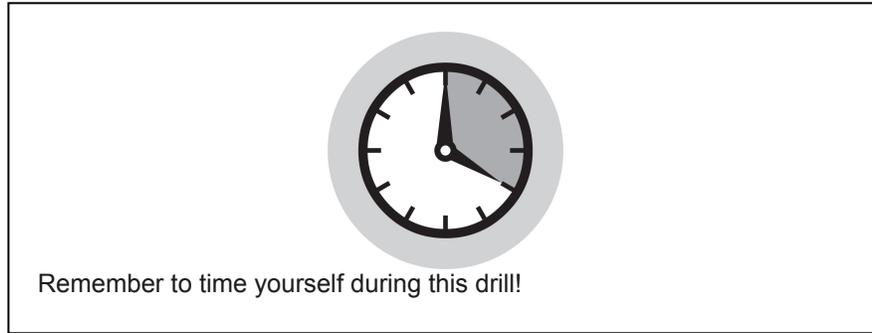


PRACTICE DRILL 5—PLUGGING IN THE ANSWERS



1. Ted can read 60 pages per hour. Naomi can read 45 pages per hour. If both Ted and Naomi read at the same time, how many minutes will it take them to read a total of 210 pages?
(A) 72
(B) 120
(C) 145
(D) 180
2. Three people—Paul, Sara, and John—want to put their money together to buy a \$90 radio. If Sara agrees to pay twice as much as John, and Paul agrees to pay three times as much as Sara, how much must Sara pay?
(A) \$10
(B) \$20
(C) \$30
(D) \$45
3. Four less than a certain number is two-thirds of that number. What is the number?
(A) 1
(B) 6
(C) 8
(D) 12

More Practice: Lower Level

4. There are 12 more girls than boys in a classroom. If there are 30 total students in the classroom, how many girls are there in the classroom?
(A) 9
(B) 12
(C) 20
(D) 21
5. Victor, Jonathan, and Russell buy a home theater system. Victor pays twice as much as Jonathan, and Victor pays half as much as Russell. If the home theater system costs \$560, how much does Jonathan pay?

- (A) \$60
- (B) \$80
- (C) \$100
- (D) \$120

Lower level students can stop here and check answers in Chapter 17.
The rest of you, keep going!

More Practice: Middle and Upper Levels

6. Adam is half as old as Bob and three times as old as Cindy. If the sum of their ages is 40, what is Bob's age?
- (A) 6
 - (B) 12
 - (C) 18
 - (D) 24
7. If $70x + 33y = 4,233$, and x and y are positive integers, x could be which of the following values?
- (A) 42
 - (B) 47
 - (C) 55
 - (D) 60
8. The sum of three positive integers is 9 and their product is 24. If the smallest of the integers is 2, what is the largest?
- (A) 4
 - (B) 6
 - (C) 8
 - (D) 9
9. Lori is 15 years older than Carol. In 10 years, Lori will be twice as old as Carol. How old is Lori now?
- (A) 5
 - (B) 12
 - (C) 20
 - (D) 25
10. A group of people are sharing equally the \$30 cost of renting a car. If an additional person joined the group, each person would owe \$1 less. How many people are in the group currently?
- (A) 5
 - (B) 6
 - (C) 10
 - (D) 12

Practice Drill 5—Plugging In the Answers1. **B**

The question is asking for a specific value and there are real numbers in the choices, so use PITA to solve. Ted can read 60 pages per hour, which is 60 pages in 60 minutes, and Naomi can read 45 pages in 60 minutes. Combined, they can read 105 pages ($60 + 45$) in 60 minutes. Now, start with one of the middle choices to see which answer will yield a total of 210 pages. Try (B): if they read for 120 minutes, they will read double the amount they did in 60 minutes. That will make the math easy. In 60 minutes they read 105 pages, so $105 \times 2 = 210$. This satisfies the question, so (B) is correct.

2. **B**

The question is asking for a specific value and there are real numbers in the choices, so use PITA to solve, starting with (C). The choices represent how much Sara pays. If Sara pays \$30 and she pays twice as much as John, then John would have paid \$15 since $\frac{1}{2} \times 30 = 15$. Paul paid three times as much as Sara, so he would have paid $3 \times 30 = 90$. This added together is more than \$90, so eliminate (C) and (D), as these will amount to a total that is too much. Try (B): if Sara paid \$20, John would have paid \$10 since $\frac{1}{2} \times 20 = 10$. Paul paid $3 \times 20 = 60$. Add these amounts together to find that $\$20 + \$10 + \$60 = \90 , which satisfies the question. The correct answer is (B).

3. **D**

First, translate the English into math and then use PITA to test the choices. *Four less than a certain number* translates to $n - 4$, and *two-thirds of a number* translates to $\frac{2}{3} \times n$. So the equation is $n - 4 = \frac{2}{3} \times n$. Now, use PITA to find the one that satisfies the equation, starting with (C). If $n = 8$, then the equation will read $8 - 4 = \frac{2}{3}(8)$. Since $4 \neq \frac{16}{3}$, eliminate (C) and try another choice. Try (D): if $n = 12$, then $12 - 4 = \frac{2}{3}(12)$, which is $8 = \frac{24}{3}$ or $8 = 8$. Since 12 works, stop here. The correct answer is (D).

More Practice: Lower Level4. **D**

The question is asking for a specific value and there are real numbers in the choices, so use PITA to solve. The question asks how many girls are in the class, so label the choices “girls”

and create another label next to it marked “boys.” Test the choices, starting with (C). If there are 20 girls in the classroom, then subtract 12 to find the number of boys: $20 - 12 = 8$ boys. $20 + 8 = 28$, which means that (C) is too small. Eliminate (A), (B), and (C). Choice (D) must be the correct answer, so be aggressive if you’re worried about the time. If you have time to check, you will see that it works because if there are 21 girls, then $21 - 12 = 9$, so there are 9 boys. $21 + 9 = 30$, which matches the total given in the problem. The correct answer is (D).

5. **B**

The question is asking for a specific value and there are real numbers in the choices, so use PITA to solve. The question asks for how much Jonathan paid, so label the choices as such and create two additional columns next to it, one labeled as Victor and the other as Russell. Now, test the choices and follow instructions from the question stem, starting with (C). Choice (C) means that Jonathan paid \$100. The question states that *Victor paid twice as much as Jonathan*, so Victor paid $100 \times 2 = 200$. The question then states that *Victor paid half as much as Russell*, so Russell paid twice as much as Victor: $200 \times 2 = 400$. Find the total: $\$100 + \$200 + \$400 = \700 , which is too much, so eliminate (C) and (D). Try (B): if Jonathan paid \$80, then Victor paid $80 \times 2 = 160$, and Russell paid $160 \times 2 = 320$. Find the total: $\$80 + \$160 + \$320 = \560 , which is the amount stated in the question. The correct answer is (B).

More Practice: Middle and Upper Levels

6. **D**

The question is asking for a specific value and there are real numbers in the choices, so use PITA to solve. The question asks for Bob’s age, so label the choices “Bob” and create 2 additional columns next to it, one labeled as Adam and the other as Cindy. Now, follow the steps of the question and test the choices, starting with (C). If Bob is 18, then Adam must be 9 because *Adam is half as old as Bob*. It is also stated that *[Adam] is three times as old as Cindy* (remember, Adam is the subject of the sentence), so Cindy must be 3 since $\frac{9}{3} = 3$. Find the total of their ages: $18 + 9 + 3 = 30$, which is too small. Eliminate (A), (B), and (C). Choice (D) is the only answer left, so it must be correct. Stop work and move on! If you have time later to check, you’ll see that if Bob is 24, then Adam must be 12 and Cindy is 4, which makes the total $24 + 12 + 4 = 40$. The correct answer is (D).

7. **D**

The question is asking for a specific value and there are real numbers in the choices, so use PITA to solve. The question asks for a possible value of x . So, plug in for x and see if there is an integer that would work to make the rest of the equation balance. Start with one of the middle choices. Try (C): if $x = 55$, then $70(55) = 3,850$. Solve the rest of the equation: $3,850 + 33y = 4,233$ to see if y is an integer. Subtract 3,850 from both sides to find that $33y = 383$. You can try dividing, but you could also guesstimate: $33 \times 11 = 363$ and $33 \times 12 = 396$, so 383 is not divisible by 33. Therefore, eliminate (C) and try another choice. Try (D): $70(60) + 33y = 4,233$ simplifies to $4,200 + 33y = 4,233$. Subtract 4,200 from both sides to find that

$33y = 33$. Divide each side by 33 to find that $y = 1$. Since 1 is an integer, this satisfies the question. The correct answer is (D).

8. **A**

This question gives a fair amount of information in the question, that the smallest of the three integers is 2, the sum of $2 + x + y = 9$, and the product of $2xy = 24$. Simplify these equations first and then use PITA to solve. Subtract 2 from either side of the sum to find that $x + y = 7$, and divide by 2 in the second equation to find that $xy = 12$. Now Plug In, starting with the largest number to find the largest number as efficiently as possible. Eliminate (C) and (D) right away since 8 or 9 added to another positive integer cannot equal 7. Try (B): plug in 6 to get $6 + y = 7$, so y would have to equal 1. This cannot be true, however, since the smallest integer has to be 2. Eliminate (B). Choice (A) is the only answer left, so it must be correct. Stop work and move on! If you have time later to check, you'll see that if you plug in 4 that $4 + y = 7$ means that $y = 3$. These are both larger than 2, the smallest number. Do these numbers work in the second equation? Yes! $3 \times 4 = 12$. The correct answer is (A).

9. **C**

Be sure to label the choices very carefully to stay visually organized. The question asks for Lori's age now, so label the choices "L," and create another column to the right and label it "C" for Carol's age. Next, create two more columns and label them as "L + 10" and "C + 10" for their respective ages in 10 years. Now, plug in, starting with (C): if Lori is 20 years now, Carol must be 5 because *Lori is 15 years older than Carol*. This means that in 10 years, Lori will be 30 ($20 + 10 = 30$), and Carol will be 15 ($5 + 10 = 15$). The question states that *in 10 years, Lori will be twice as old as Carol*. $30 = 2 \times 15$, so this satisfies the statement. The correct answer is (C).

10. **A**

Let the choices help here. The choices represent how many people are currently in the group. Eliminate (D) immediately since 30 cannot be divided 12 ways (hopefully there aren't partial people in the car!). Try (B), which is the middle answer of the remaining choices: if there are 6 people renting the car now, the cost would be \$5 each since $\frac{30}{6} = 5$. If a seventh person joined, the cost per person would be $\frac{30}{7}$, which is not an integer. Since the problem stated that adding 1 person to the group would result in each person owing \$1 less, this does not satisfy the question, so eliminate (B) and try another choice. Try (A): if there are 5 people renting the car, they will each pay \$6 since $\frac{30}{5} = 6$. If a sixth person joins, they will each pay \$5 because $\frac{30}{6} = 5$. Since \$5 is exactly one dollar less than \$6, this satisfies the question stem. Choice (A) is correct.

Extra Practice

1. **B**

Guesstimating is one way to work through this problem. The shaded region looks to be about half the square, and half of 144 is 72, (B). To be more precise, the side of the square must be 12 since $A = s^2$ and $12^2 = 144$, so the height of each shaded triangle is 12. The base for one triangle ends at P and the base for the other triangle ends at Q , and $PQ = 12$ since it's a side of the square. So make the base for each triangle 6 since the two bases must add up to 12. Plug those values into the formula: $A = \frac{1}{2}bh = \frac{1}{2}(6)(12) = 36$. Since both areas equal 36, the total area of the shaded region is $36 + 36 = 72$. The correct answer is (B).

2.

B

Break this question down one piece of information at a time. The question asks for the shaded region, so you want the part inside the square but outside the circle. In other words, if you find the area of the square and the area of the circle, you can find the shaded region by removing what you do not need (the area of the circle). First, find the area of the square. The side of the square is equal to 4, so $A = s^2 = 4^2 = 16$. Eliminate (A), (C), and (D), since these do not contain 16. For added security, find the area of the circle. The radius is 2, so $A = \pi r^2 = \pi(2)^2 = 4\pi$. Remember to subtract that from the area of the square, so the full answer is $16 - 4\pi$. The correct answer is (B).