

**Using Classes – MCQ Part A**

**This quiz has 15 questions.**

1. A student has created a **Book** class. The class contains variables to represent the following.

- An `int` variable called `pages` to represent the number of pages
  - A `boolean` variable called `isHardcover` to indicate whether or not the book is hardcover
- The object `story` will be declared as type **BOOK**. Which of the following descriptions is accurate?

- (A) An instance of the `story` class is **BOOK**.
- (B) An instance of the **BOOK** object is `story`.
- (C) An attribute of the `story` object is `isHardcover`.
- (D) An attribute of the `pages` object is **BOOK**.
- (E) An attribute of the **BOOK** instance is `story`.

2. A school administrator has created a **Student** class. The class contains variables to represent the following.

- An `int` variable called `studentID` to represent the student's ID number
- A `String` variable called `studentName` to represent the student's name

The school administrator has also created a **Parent** class. The class contains variables to represent the following.

- A `String` variable called `parentName` to represent the parent's name
- A `String` variable called `email` to represent the parent's e-mail address

The object `penelope` will be declared as type **Student**. The object `mrSPatel` will be declared as type **Parent**.

Which of the following descriptions is accurate?

- (A) An attribute of the `penelope` object is `email`.
- (B) An attribute of the `penelope` object is **Parent**.
- (C) An attribute of the `penelope` object is **Student**.
- (D) An attribute of the `mrSPatel` object is `studentName`.
- (E) An attribute of the `mrSPatel` object is `email`.

3. A teacher has created a **Student** class. The class contains the following.

- An `int` variable called `grade` to represent the student's grade level
- A `String` variable called `name` to represent the student's name
- A `double` variable called `average` to represent the student's grade-point average
- A method called `updateAverage` that updates the student's average.

The object `greg` will be declared as type **Student**. Which of the following descriptions is accurate?

- (A) `greg` is an instance of the **Student** class.
- (B) `greg` is an instance of the `updateAverage` method.
- (C) `greg` is an instance of three attributes.
- (D) **Student** is an instance of the `greg` object.
- (E) `updateAverage` is an instance of the **Student** class.

4. Consider the following description of the **Thing** class which includes two constructors.

- `public Thing()` – constructs a **Thing** object that uses a default value to represent a color
- `public Thing(String setColor)` – constructs a **Thing** object that uses `setColor` to represent a color

Which of the following code segments, when appearing in a class other than **Thing**, will create an instance variable of a **Thing** object with a value of `null`?

- (A) `private Thing something = new Thing("Green");`
- (B) `private Thing something = new Thing("");`
- (C) `private Thing something = new Thing();`
- (D) `private Thing something;`
- (E) `private Thing("Green");`

**Using Classes – MCQ Part A**

5. Consider the following description of the `VetRecord` class which includes two constructors.

- `public VetRecord(String name, int age, int weight, boolean needsVac)` – constructs a `VetRecord` object that represents a vet record for a pet with name `name`, age `age`, weight `weight`, and whether they need to be vaccinated `needsVac`.
- `public VetRecord(String name, int age, int weight)` – constructs a `VetRecord` object that represents a vet record for a pet with name `name`, age `age`, weight `weight`.

A new constructor is to be added to the `VetRecord` class. Which of the following is NOT a possible header for the new constructor?

- (A) `VetRecord(int age, int weight)`
- (B) `VetRecord(int age, boolean needsVac)`
- (C) `VetRecord(String name, int age)`
- (D) `VetRecord(String name, boolean needsVac)`
- (E) `VetRecord(String name, int weight, int age)`

6. Consider the following description of the `Vbox` class which includes two constructors.

- `public Vbox(int w, int h, int d)` – constructs a `Vbox` object that represents a box with width `w`, height `h`, depth `d`.
- `public Vbox(int leng)` – constructs a `Vbox` object that represents a box with width `len`, height `len`, depth `len`.

Which of the following declarations, appearing in a method in a class other than `Vbox`, will correctly instantiate a `Vbox` object?

- I. `Vbox b1 = new Vbox(4);`
  - II. `Vbox b2 = new Vbox(3, 8, 4);`
  - III. `Vbox B3 = new Vbox(4.0, 4.0, 4.0);`
- (A) I only
  - (B) II only
  - (C) I and II only
  - (D) I and III only
  - (E) II and III only

7. Consider the following description of the `MagicNumber` class which includes one constructor and two methods.

- `public MagicNumber()` – constructs a `MagicNumber` object that represents a number.
- `public void displaynumber()` – displays the number to the screen.
- `public void add_2()` – increases the number by 2.

When located in a method in a class other than `MagicNumber`, which of the following code segments will compile without error?

- I. `MagicNumber.add_2();`  
`MagicNumber.displayNumber();`
  - II. `MagicNumber n1 = new MagicNumber();`  
`n1.add_2();`  
`n1.displayNumber();`
  - III. `n2.add_2();`  
`n2.displayNumber();`
- (A) I only
  - (B) II only
  - (C) III only
  - (D) II and III only
  - (E) None of the code segments will compile.

8. Consider the following description of the `Purchase` class which includes one constructor and one method.

- `public Purchase(double purchaseAmt, double taxAmt)` – constructs a `Purchase` object that represents a single purchase with purchase amount `purchaseAmt` and tax `taxAmt`.
- `public void totalAmount()` – Displays the sum of the purchase amount and the tax.

Assume that a `Purchase` object `p` has been properly declared and initialized. Which of the following code segments will successfully print the total purchase amount associated with `p`?

- (A) `Purchase.totalAmount();`
- (B) `System.out.print(p);`
- (C) `totalAmount(p);`
- (D) `System.out.print(p.totalAmount());`
- (E) `p.totalAmount();`

**Using Classes – MCQ Part A**

9. Consider the following description of the `AnimalPrinter` class which includes two methods.
- `public void printDog()` – displays the word “dog” and then moves the cursor to a new line.
  - `public void printCat()` – displays the word “cat” and then moves the cursor to a new line.
- The method `myMethod` appears in a class other than `AnimalPrinter`. The method is intended to produce the following output.
- ```
dog
cat
```
- Assume that an `AnimalPrinter` object `myPrinter` has been properly declared and initialized inside `myMethod`. Which of the following code segments, if located in `myMethod`, will produce the intended output?
- (A) `printDog();`  
`printCat();`
- (B) `printDog(AnimalPrinter);`  
`printDog(AnimalPrinter);`
- (C) `AnimalPrinter.printDog();`  
`AnimalPrinter.printCat();`
- (D) `printDog(myPrinter);`  
`printCat(myPrinter);`
- (E) `myPrinter.printDog();`  
`myPrinter.printCat();`
10. Consider the following descriptions of two methods, which appear in the same class.
- `public void methodA(int arg)` – calls `methodB` with the value of `arg * 10`.
  - `public void methodB(int arg)` – displays the value of `arg + 10`.
- Consider the call `methodA(4)`, which appears in a method in the same class. What, if anything, is printed as a result of the call `methodA(4)`?
- (A) 14
- (B) 40
- (C) 50
- (D) 140
- (E) Nothing is printed.
11. Consider the following description method `adjust`.
- `public void adjust(double max, double min, double total, double n)` – displays the value of  $(total - max - min) / (n - 2.0)$
- Consider the call `adjust(25.0, 5.0, 60.0, 5.0)`, which appears in a method in the same class. What is printed as a result of the method call?
- (A) 6.0
- (B) 10.0
- (C) 12.0
- (D) 15.0
- (E) 20.0
12. Consider the following description method `printSomething`.
- `public void printSomething(int num, boolean val)` – displays the value of `val` immediately followed by the value of `num - 1`.
- Consider the following code segment, which appears in a method in the same class as `printSomething`.
- ```
printSomething(1, true);
printSomething(2, true);
```
- What is printed as a result of executing the code segment?
- (A) 0true1true
- (B) 1true2true
- (C) true0true1
- (D) true1true0
- (E) true1true2
13. Consider the following `secret` method.
- `public double secret(int x, double y)` – Which of the following lines of code, if located in a method in the same class as `secret`, will compile without error?
- (A) `int result = secret(4,4);`
- (B) `int result = secret(4,4.0);`
- (C) `double result = secret(4,4.0);`
- (D) `double result = secret(4.0,4);`
- (E) `double result = secret(4.0,4.0)`

**Using Classes – MCQ Part A**

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14. Consider the following description of method `min`.

- `public int min(int first, int second)` – returns the lesser of its two parameters.

Assume that each of the following expressions appears in a method in the same class as the method `min`. Assume also that the `int` variables `p`, `q`, and `r` have been properly declared and initialized. Which of the following expressions evaluates to the minimum value among `p`, `q`, and `r`?

- I. `min(min(p, q), r)`
- II. `min(p, min(q, r))`
- III. `min(min(p, q), p)`

- (A) I only
- (B) II only
- (C) III only
- (D) I and II only
- (E) I, II and III only

15. Consider the following description of method `fahrenheitToCelsius`.

- `public double fahrenheitToCelsius(double f)` – takes as input a temperature in degrees Fahrenheit and returns the corresponding temperature in degrees Celsius.

Assume that each of the following code segments appears in a method in the same class as `fahrenheitToCelsius`. Which of the following code segments prints the temperature in degrees Celsius that corresponds to 32 degrees Fahrenheit?

- (A) 

```
double f = 32.0;
fahrenheitToCelsius();
System.out.println(f);
```
- (B) 

```
double f = 32.0;
f = fahrenheitToCelsius();
System.out.println(f);
```
- (C) 

```
double f = 32.0;
fahrenheitToCelsius(f);
System.out.println(f);
```
- (D) 

```
double f = 32.0;
double c = fahrenheitToCelsius();
System.out.println(c);
```
- (E) 

```
double f = 32.0;
double c = fahrenheitToCelsius(f);
System.out.println(c);
```