A train arrives at a station uniformly between 8:00 a.m. and 8:40 a.m. Let the random variable X represent the number of minutes the train arrives after 8:00 a.m. What is the probability that the train arrives between 8:10 a.m. and 8:25 a.m.?

```
##Question 01

a <- 0
b <- 40
p <- (25-10) / (b-a)
p
```

```
> a <- 0
> b <- 40
> p <- (25-10) / (b-a)
> p
[1] 0.375
```

1. The time (in hours) to complete a software update is exponentially distributed with rate λ=1/3. Find the probability that an update will take at most 2 hours.

```
##Question 02

p <- pexp(2,rate = 1/3)
p
```

```
> p <- pexp(2,rate = 1/3)
> p
[1] 0.4865829
```

3. Suppose IQ scores are normally distributed with a mean of 100 and a standard deviation of 15.

i. What is the probability that a randomly selected person has an IQ above 130?

```
##Question 03

##(i)
p <- 1 - pnorm(130, mean = 100, sd = 15)
p
```

```
> p <- 1 - pnorm(130, mean = 100, sd = 15)
> p
[1] 0.02275013
```

ii. What IQ score represents the 95th percentile?

```
##(ii)
q <- qnorm(0.95, mean = 100, sd = 15)
q
```

```
> q <- qnorm(0.95, mean = 100, sd = 15)
> q
[1] 124.6728
```