

```
/* Calculate the acceleration of a jet fighter launched from an aircraft-carrier
catapult, given the jet's takeoff speed and the distance over which the catapult
accelerates the jet from rest to takeoff.
```

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*Author:Rachel Heil
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```
*Version 1
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```
*/
```

```
#include <stdio.h>
```

```
#include <math.h>
```

```
int main(void)
```

```
{
```

```
    double speed, distance;
```

```
    double accel, time;
```

```
    /*prompt user for the jet's speed at takeoff in km/hr*/
```

```
    printf("Enter the jet's takeoff speed in km/hr> ");
```

```
    scanf("%lf", &speed);
```

```
    /*prompt user for the distance that the jet accelerates for before taking off*/
```

```
    printf("Enter the distance over which the jet accelerates \nfrom rest to takeoff in
meters> ");
```

```
    scanf("%lf", &distance);
```

```
    /*equation derived from distance=(1/2)at^2
```

```
    in which 'a' is replaced with (speed/time) from the formula speed=a*time*/
```

```
    time= (2*distance)/speed;
```

```
    accel=speed/time;
```

```
    /*print the time and acceleration calculated from the given values*/
```

```
    printf("The time (in seconds) for the jet to accelerate to takeoff speed is %2.2f.\n",
time);
```

```
    printf("The constant acceleration (in meters per seconds squared) of the jet is
%2.2f.\n", accel);
```

```
    return(0);
```

```
}
```

SAMPLE RUN:

Enter the jet's takeoff speed in km/hr> 278

Enter the distance over which the jet accelerates
from rest to takeoff in meters> 94

The time (in seconds) for the jet to accelerate to takeoff speed is 0.68.

The constant acceleration (in meters per seconds squared) of the jet is 411.09.

Press any key to continue