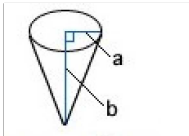
Oberflächen

Dokumentnummer: DX1017
Fachgebiet: Geometrie
Quelle für Aufgabestellungen: http://www.edhelper.com 2009_05_13

Einsatz:

BEISPIEL 1

Figure 1:



a = 4 mm
b = 16 mm

Figure 2:

Für Kegel gilt:
Grundfläche = pi * Radius²
Volumen = 1/3 * Grundfläche * Höhe
Seitenhöhe = Wurzel aus Höhe² + Radius²
Mantelfläche = pi * Radius * Seitenhöhe
Oberfläche = Grundfläche + Mantel

```
(%i1) kill(all);
(%o0) done
```

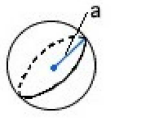
```
(%i1) r:4;h:16;
(%o1) 4
(%o2) 16
```

```
(%i3) s:sqrt(r**2+h**2);
(%o3) 4√17
```

```
(%i4) O:r**2*%pi+%pi*r*s,numer;O:floor(O*10+0.5)/10.0;
(%o4) 257.5153759520797
(%o5) 257.5
```

BEISPIEL 2

Figure 3:



a = 17 cm

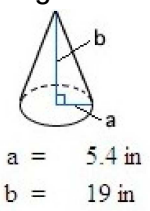
```
(%i6) kill(all);
(%o0) done
```

```
(%i1) r:17;
(%o1) 17
```

```
(%i2) O:4*r**2*%pi,numer;O:floor(O*10+0.5)/10.0;
(%o2) 3631.681107549801
(%o3) 3631.7
```

BEISPIEL 3

Figure 4:




```
(%i4) kill(all);
(%o0) done
```

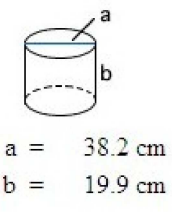
```
(%i1) r:5.4;h:19;
(%o1) 5.4
(%o2) 19
```

```
(%i3) s:sqrt(r**2+h**2);
(%o3) 19.75246820020222
```

```
(%i4) O:r**2*%pi+r*%pi*s,numer;O:floor(O*10+0.5)/10.0;
(%o4) 426.7015703139934
(%o5) 426.7
```

BEISPIEL 4

Figure 5:




```
(%i6) kill(all);
(%o0) done
```

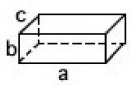
```
(%i1) d:38.2;h:19.9;
(%o1) 38.2
(%o2) 19.9
```

```
(%i3) r:d/2;
(%o3) 19.1
```

```
(%i4) O:2*r**2*%pi+2*r*%pi*h,numer;O:floor(O*10+0.5)/10.0;
(%o4) 4680.344735318075
(%o5) 4680.3
```

BEISPIEL 5

Figure 6:



a = 49 in
b = 23 in
c = 33 in

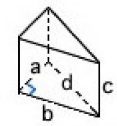
```
(%i6) kill(all);
(%o0) done
```

```
(%i1) a:49;b:23;c:33;
(%o1) 49
(%o2) 23
(%o3) 33
```

```
(%i4) o:2*(a*b+a*c+b*c);
(%o4) 7006
```

BEISPIEL 6

Figure 7:



a = 28 mm
b = 45 mm
c = 8.2 mm
d = 53 mm

```
(%i5) kill(all);
(%o0) done
```

```
(%i1) a:28;b:45;c:53;h:8.2;
(%o1) 28
(%o2) 45
(%o3) 53
(%o4) 8.199999999999999
```

```
(%i5) s:(a+b+c)/2.0;
(%o5) 63.0
```

```
(%i6) GF:sqrt(s*(s-a)*(s-b)*(s-c));
(%o6) 630.0
```

```
(%i7) O:2*GF+a*h+b*h+c*h;
(%o7) 2293.2
```