E-Z ISOMERISM

Two lobes of
one π bond

E-Z ISOMERISM

CH₃ — C = C — H with H and CH₃ substituents, marked with red X and curved rotation arrow

CANNOT ROTATE AROUND C=C

E-Z ISOMERISM
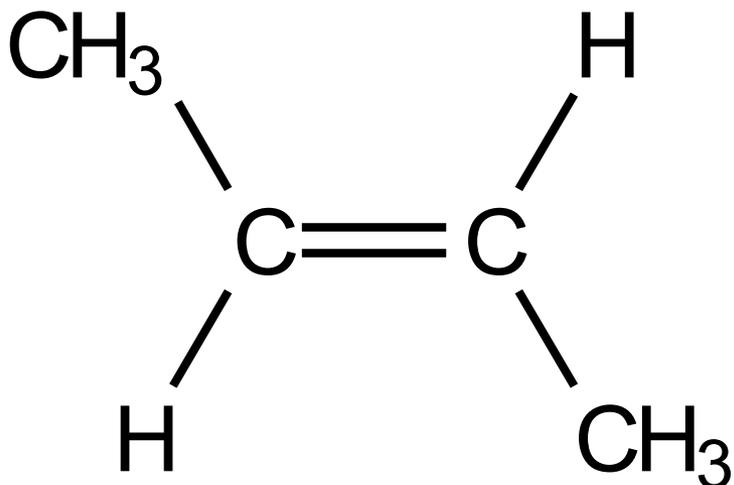
(E) but-2-ene

(Z) but-2-ene

E entgegen (opposite)
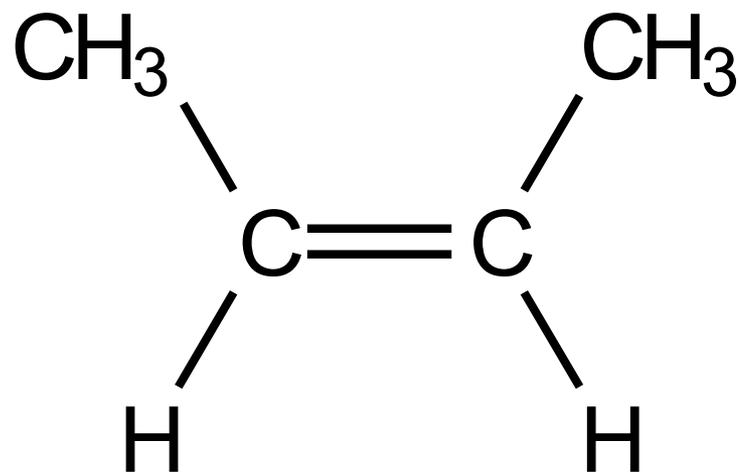
Z zusammen (together)

'zame zide'

E-Z ISOMERISM

Cahn-Ingold-Prelog (CIG) Priority Rules

PRIORITY: **H < CH$_3$ < CH$_2$CH$_3$**

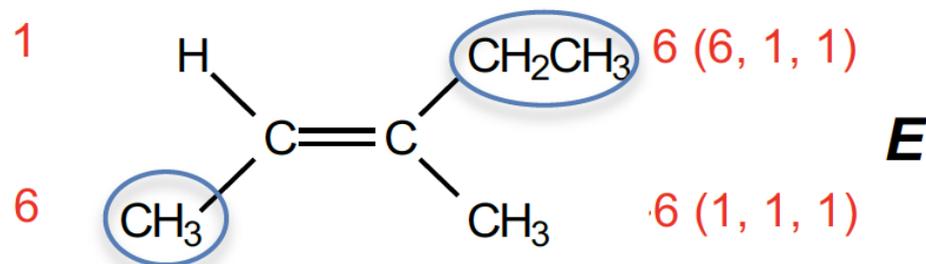Look at atomic numbers of atoms attached to C=C (or subsequent atoms if the same).

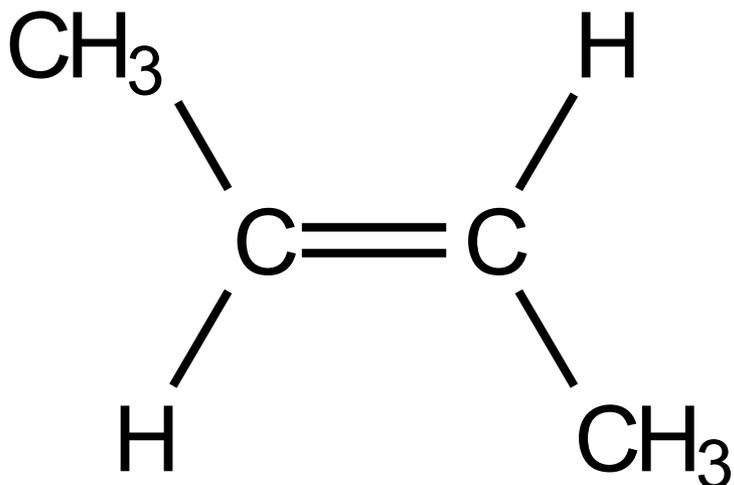Highest values opposite = E

Highest values together = Z *"zame zide"*
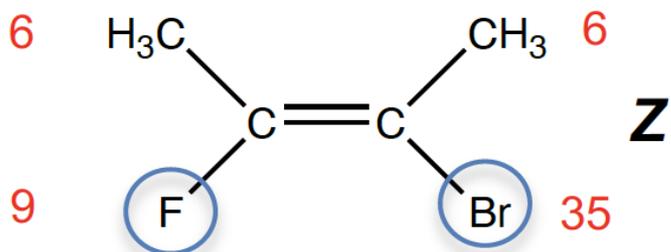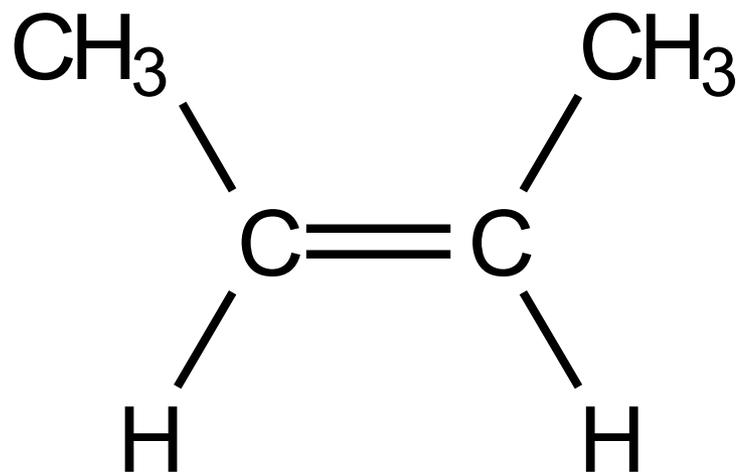

Z 2-bromo-3-fluorobut-2-ene

E 3-methylpent-2-ene
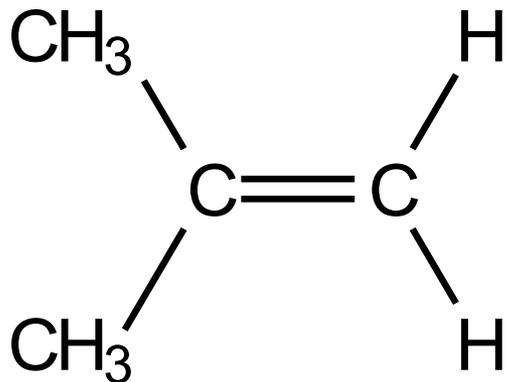
E-Z ISOMERISM

trans but-2-ene

(E) but-2-ene

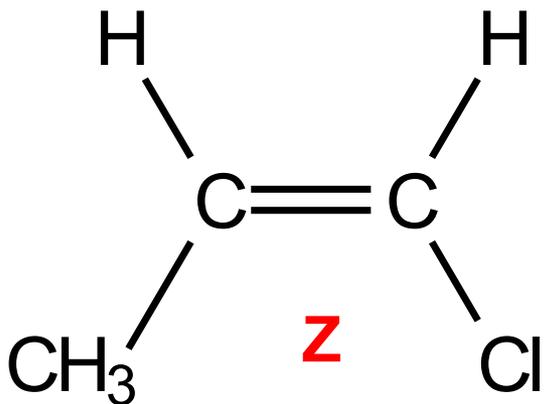cis but-2-ene

(Z) but-2-ene

BOTH C ATOMS OF C=C MUST HAVE TWO DIFFERENT GROUPS
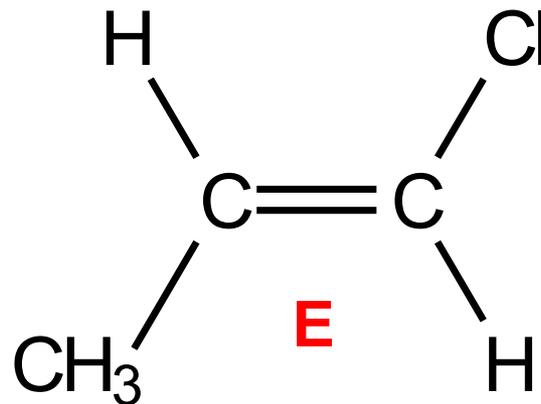
TASK

methylpropene — NO
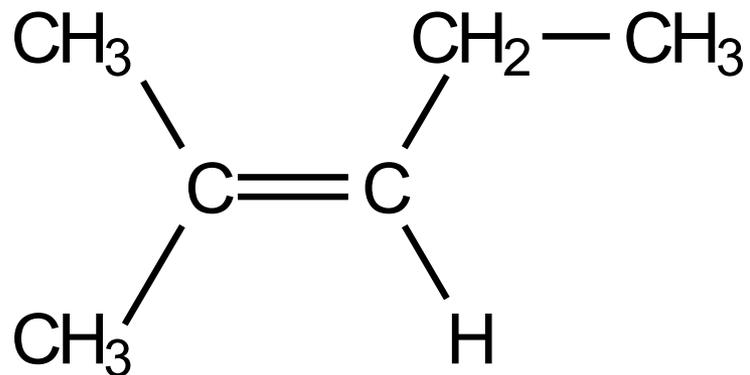
1-chloropropene — Z (YES), E (YES)

TASK

CH₃, CH₂—CH₃, C=C, CH₃, H

2-methylpent-2-ene

NO

H, CH₂—CH₂—CH₃, C=C, H, H, CH₂—CH₃

2-ethylpent-1-ene

NO

TASK

CH₃—C(CH₃)=C(CH₃)—...

E 3-methylpent-2-ene

YES

Z

NO

but-1-ene

TASK

CH₃—C(CH₃)=C(CH₃)—CH₂—CH₃

Z

YES
E
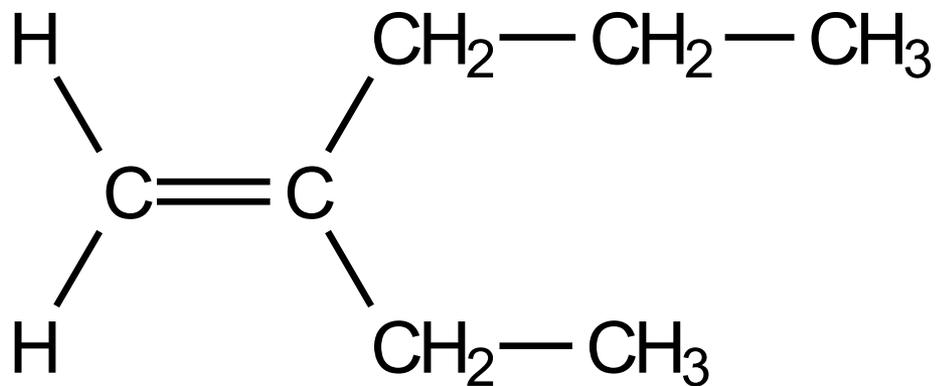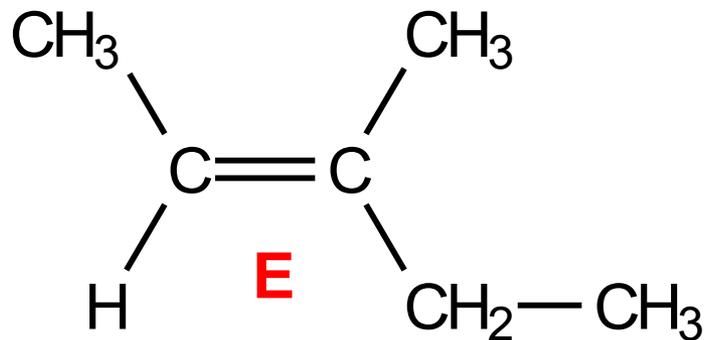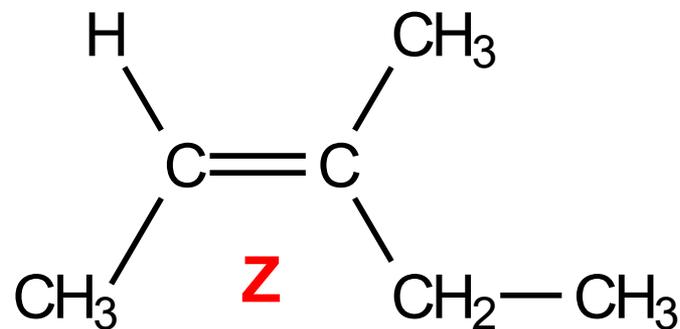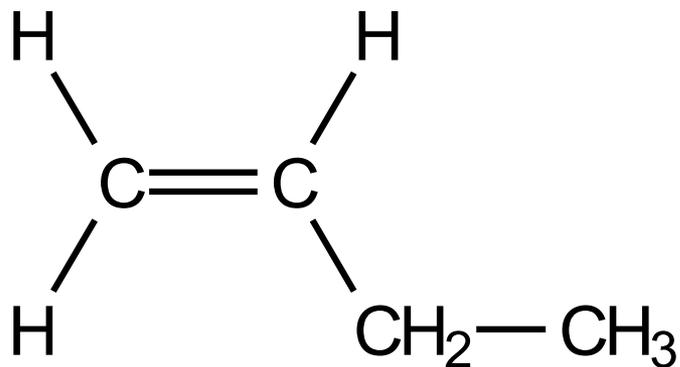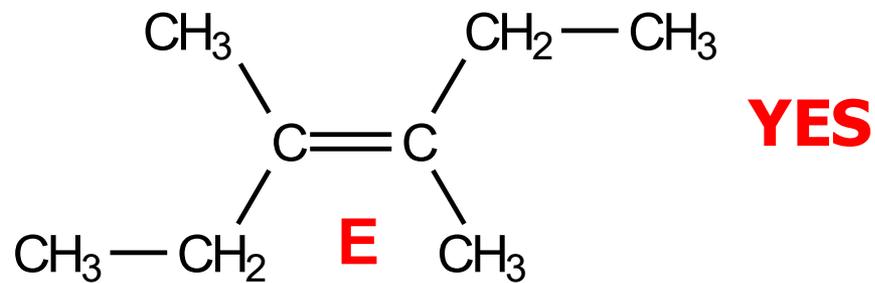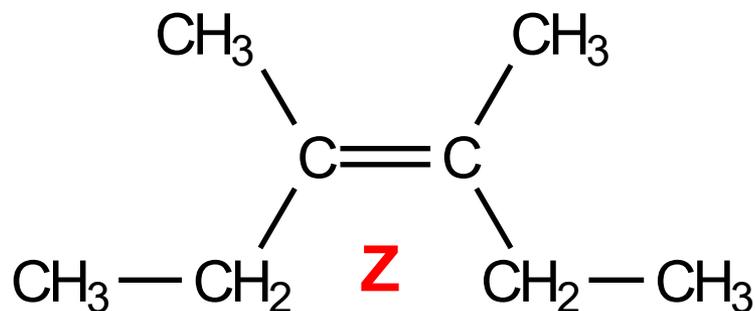
3,4-dimethylhex-3-ene

Z

YES
E

2-bromo-3-chlorobut-2-ene