46 $(3d+5f)^4$

$= (3d)^4 + 4(3d)^3(5f) + 6(3d)^2(5f)^2 + 4(3d)(5f)^3 + (5f)^4$

$= 81d^4 + 4(27)d^3 5f + 6(9)d^2 25f^2 + 4(3)d(125)f^3 + 625f^4$

$= 81d^4 + 540d^3f + 1350d^2f^2 + 1500df^3 + 625f^4$ /2

11.5 18, 26, 30

18. Chalan has 9 major assts to complete, 2 involve essays
How many different choices include at least one essay?
Order is not important.

Total choices $C(9,2) = \frac{9!}{7!2!} = \frac{9\times 8}{2} = 72$ (36) /2

Choices with NO essay $C(7,2) = \frac{7\times 6}{2} = 42$ (21)

→ Choices with at least 1 $= 72 - 42 =$ (15)

Corrected (sorry!

26 Single card drawn from 52
face card or black card
F B

face cards total $= 3\times 4 = 12$
black cards $= 26$
black face cards $= 6$

$N(F) = C(12,1)$
$N(B) = C(26,1)$
$N(F\cap B) = C(6,1)$ /2

so $N(F\cup B) = 12+26-6 = 32$ ways