

MÉTODOS DE OPTIMIZACIÓN APLICADOS A LA DISTRIBUCIÓN

Dr. Eric Alfredo Rincón García

Antecedentes

- En 1961 Vickrey propone la automatización de la distribución política.
- En 1965 Hess propone el primer algoritmo heurístico para resolver el problema (Estados Unidos).
- En 1970 Garfinkel y Nemhauser proponen un algoritmo exacto.
- En 2003 Nemoto and Hotta proponen un algoritmo basado en flujo en redes para Japón.
- En 2007 Li et al. Proponen un modelo cuadrático aplicado a Nueva York.

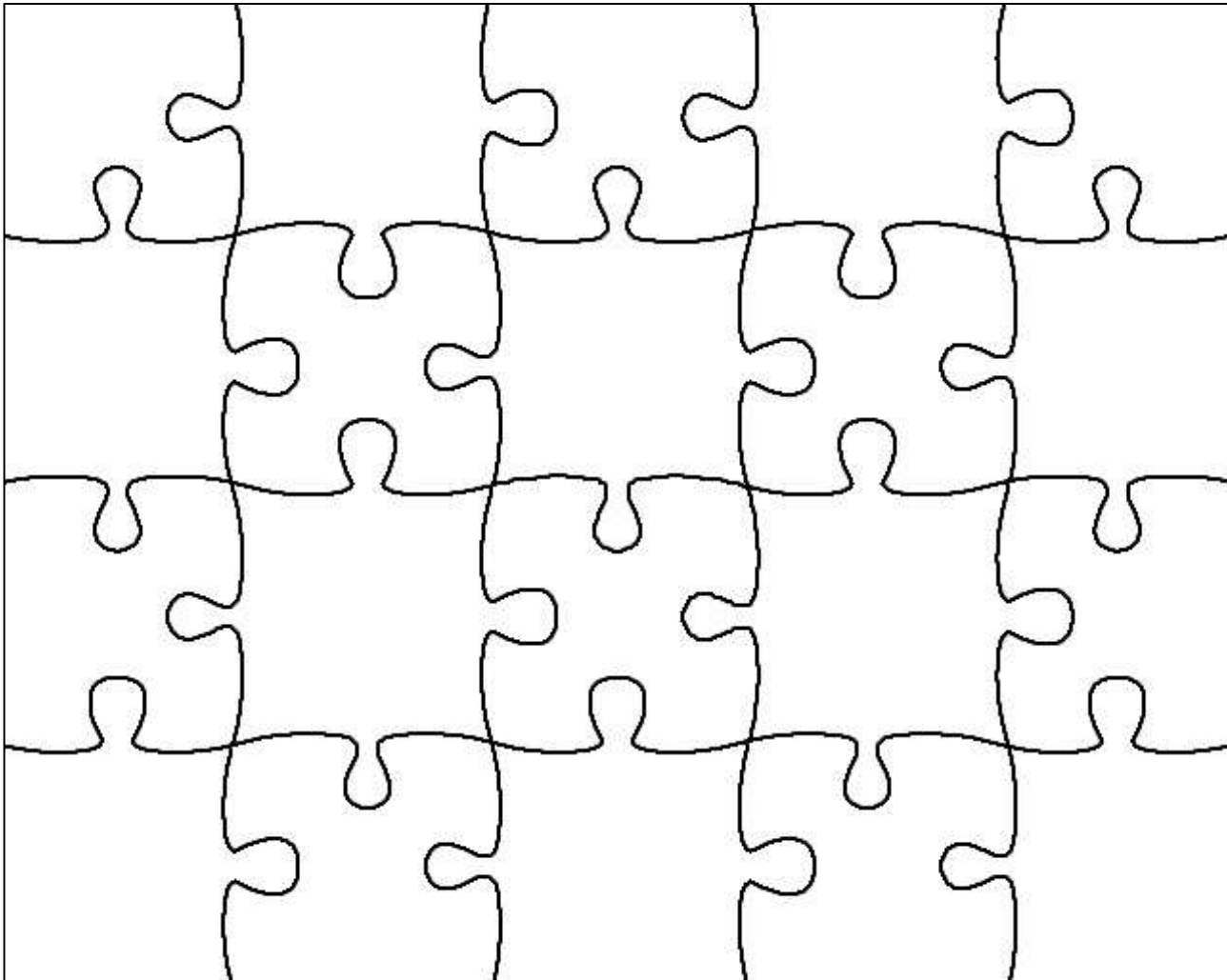
Propuestas de técnicas heurísticas

Algoritmo	País/Ciudad	Año
Recocido simulado	Estado Unidos	1990
Búsqueda tabú	Edmonton	2003
Algoritmo genético	Iowa, Carolina del norte y Carolina del sur	2003
Recocido simulado	México	2004
Algoritmo genético	Portugal	2005
Old bachelor acceptance	Italia	2008
Bosque de expansión mínima	Japón	2009
Algoritmo evolutivo	Taipei y Kaohsiung	2011
Colonia de abejas artificiales	Estado de México	2014

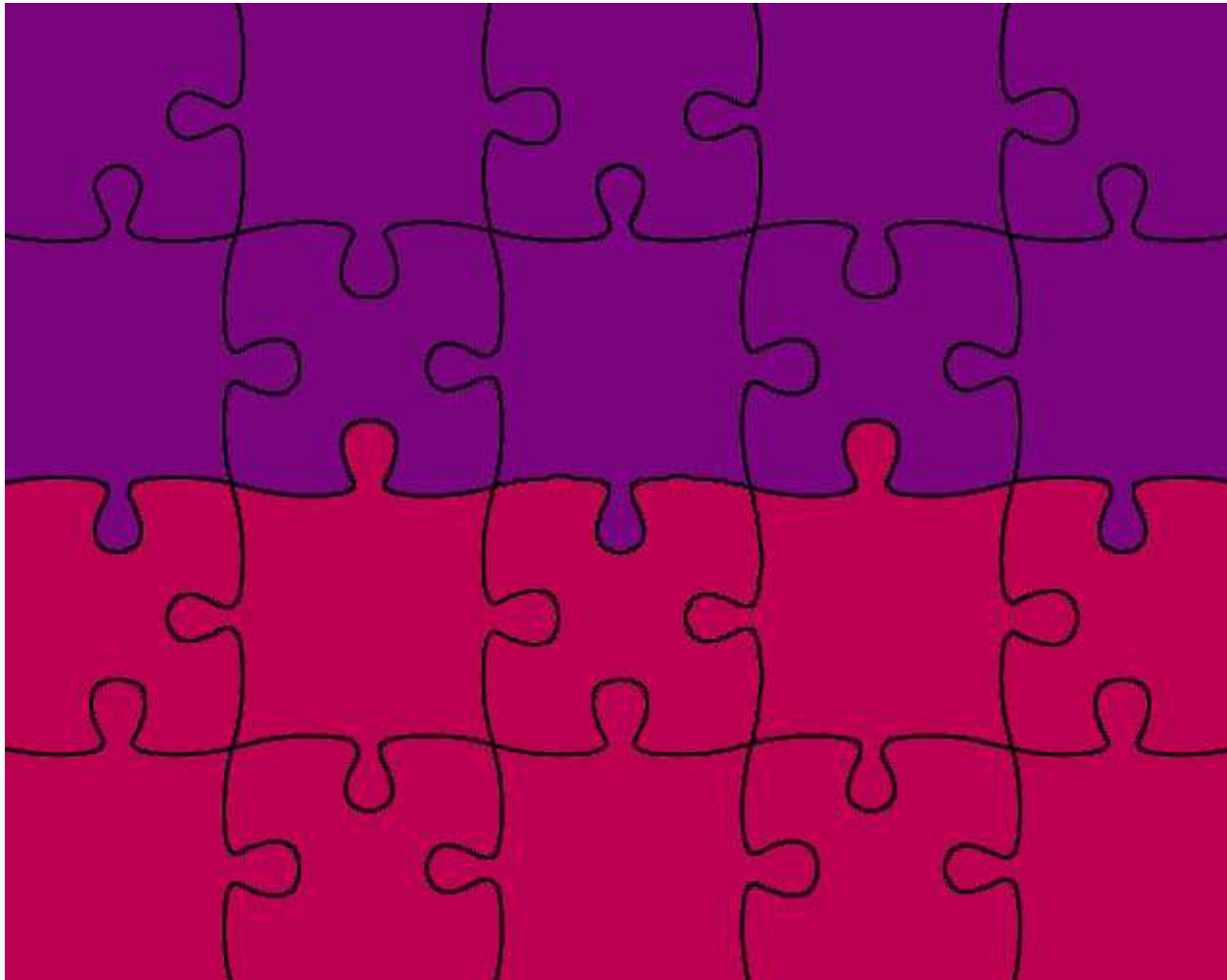
Técnicas heurísticas

Búsqueda local	Técnicas poblacionales
Recocido Simulado	Algoritmo genético
Búsqueda Tabú	Algoritmo evolutivo
Old Bachelor acceptance	Colonia de abejas artificiales

Dividir en dos zonas

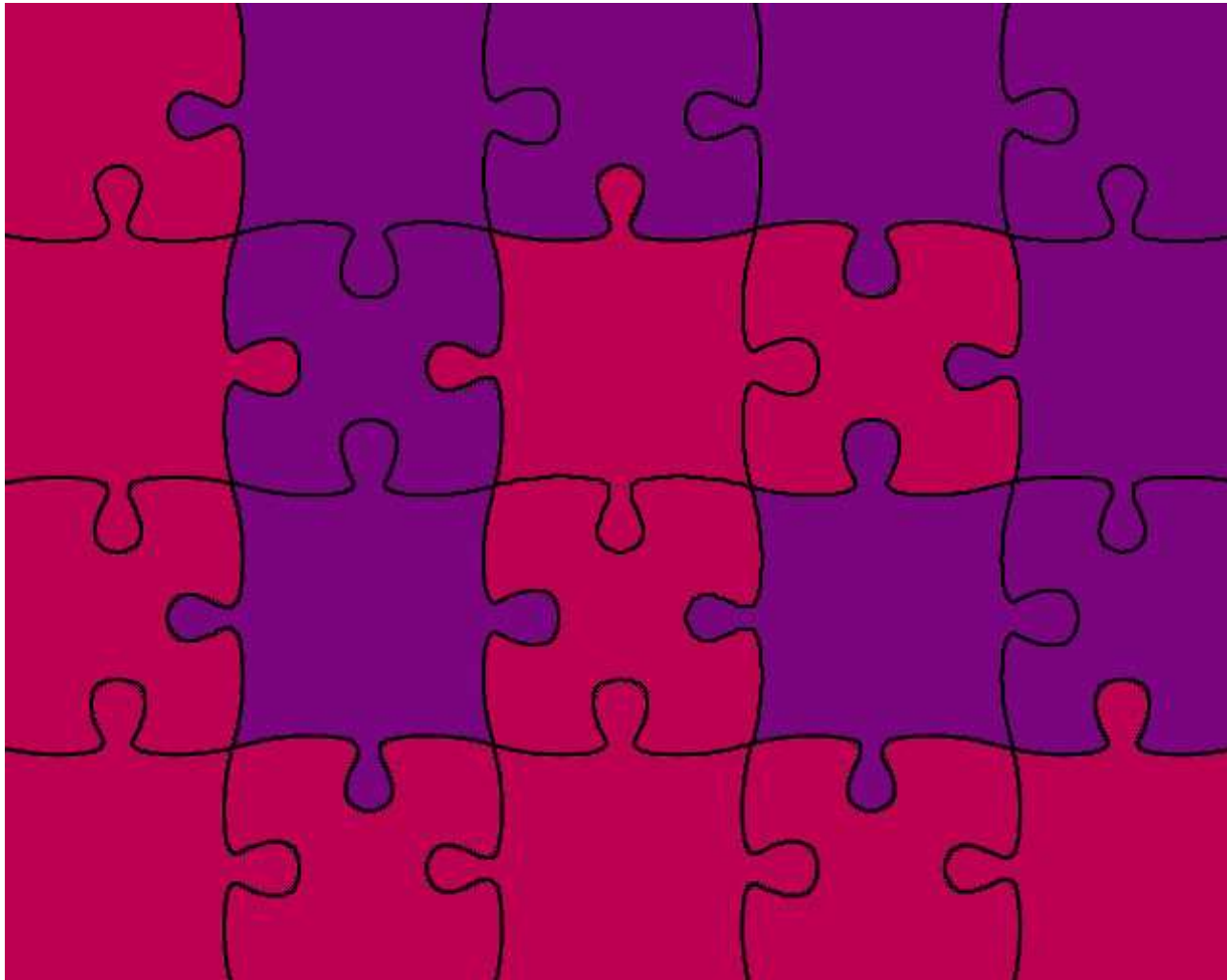


Solución óptima

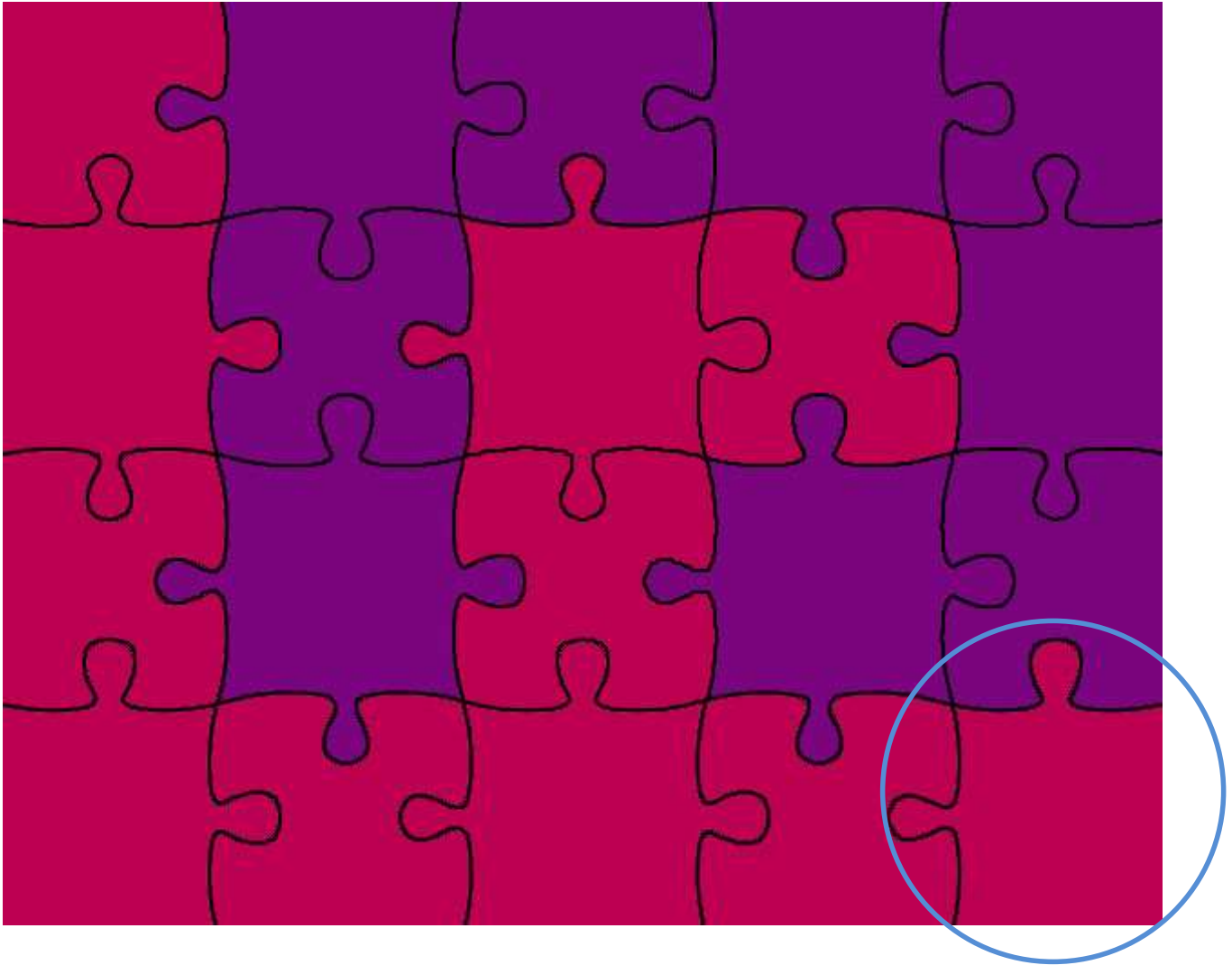


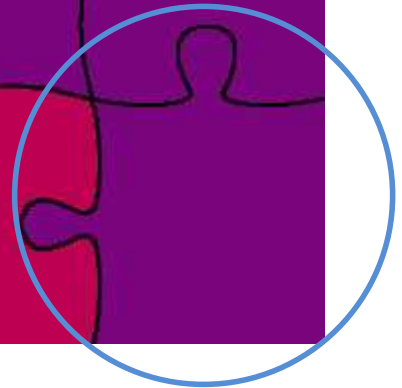
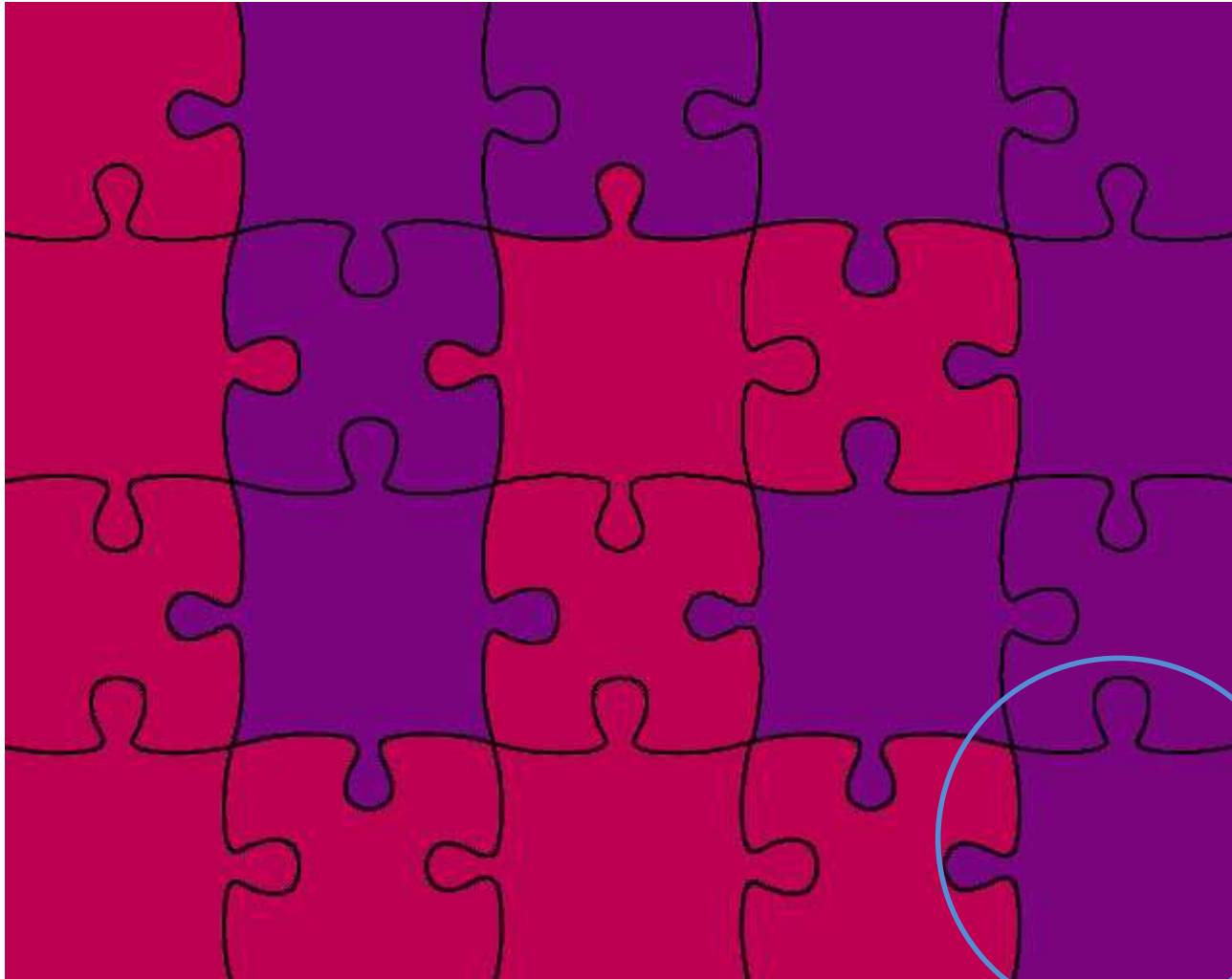
ALGORITMOS DE BÚSQUEDA LOCAL

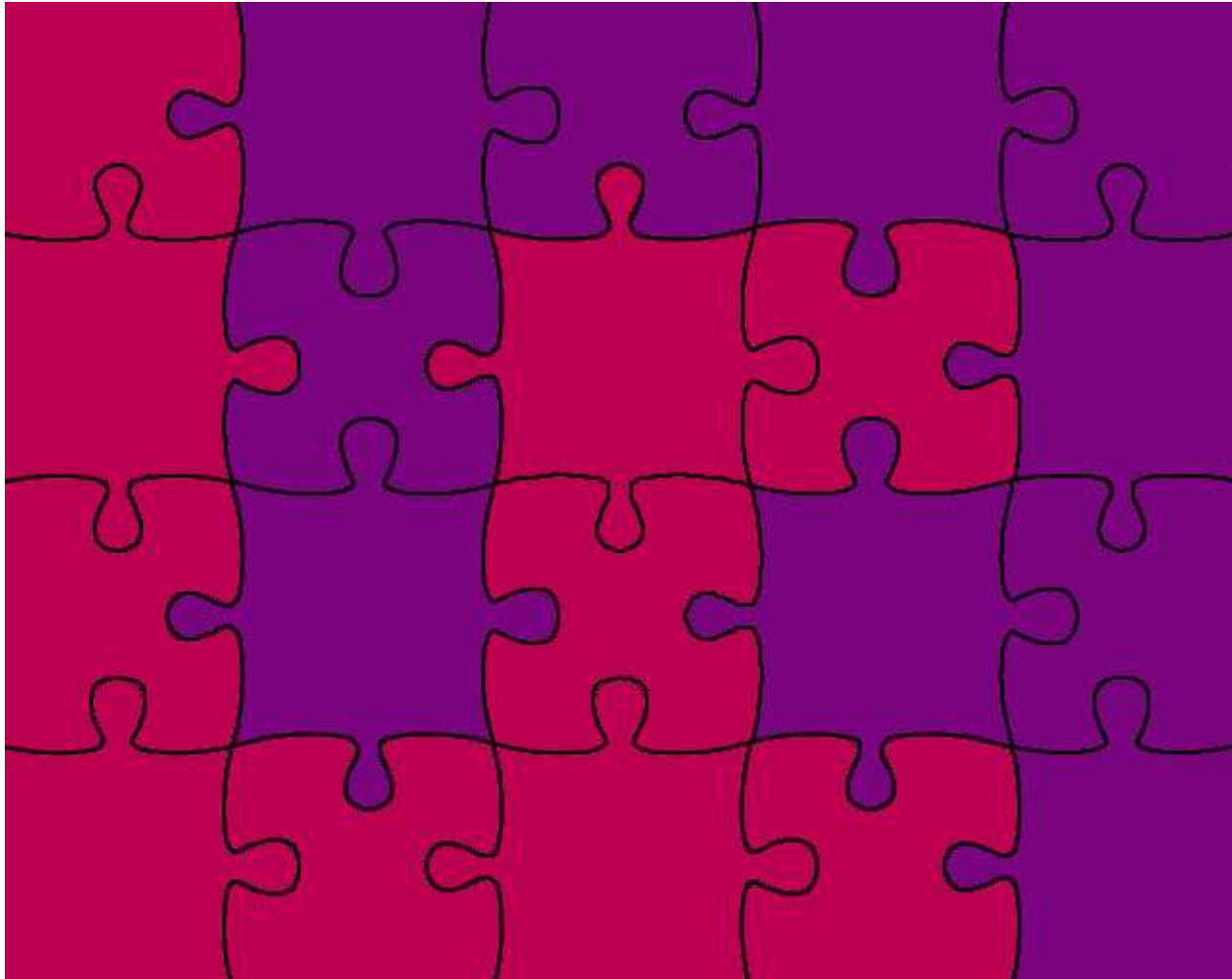
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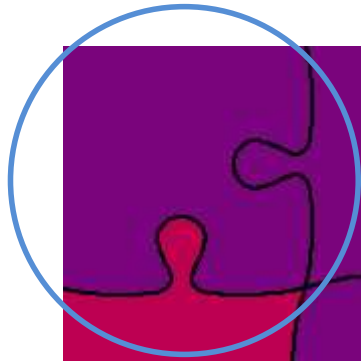
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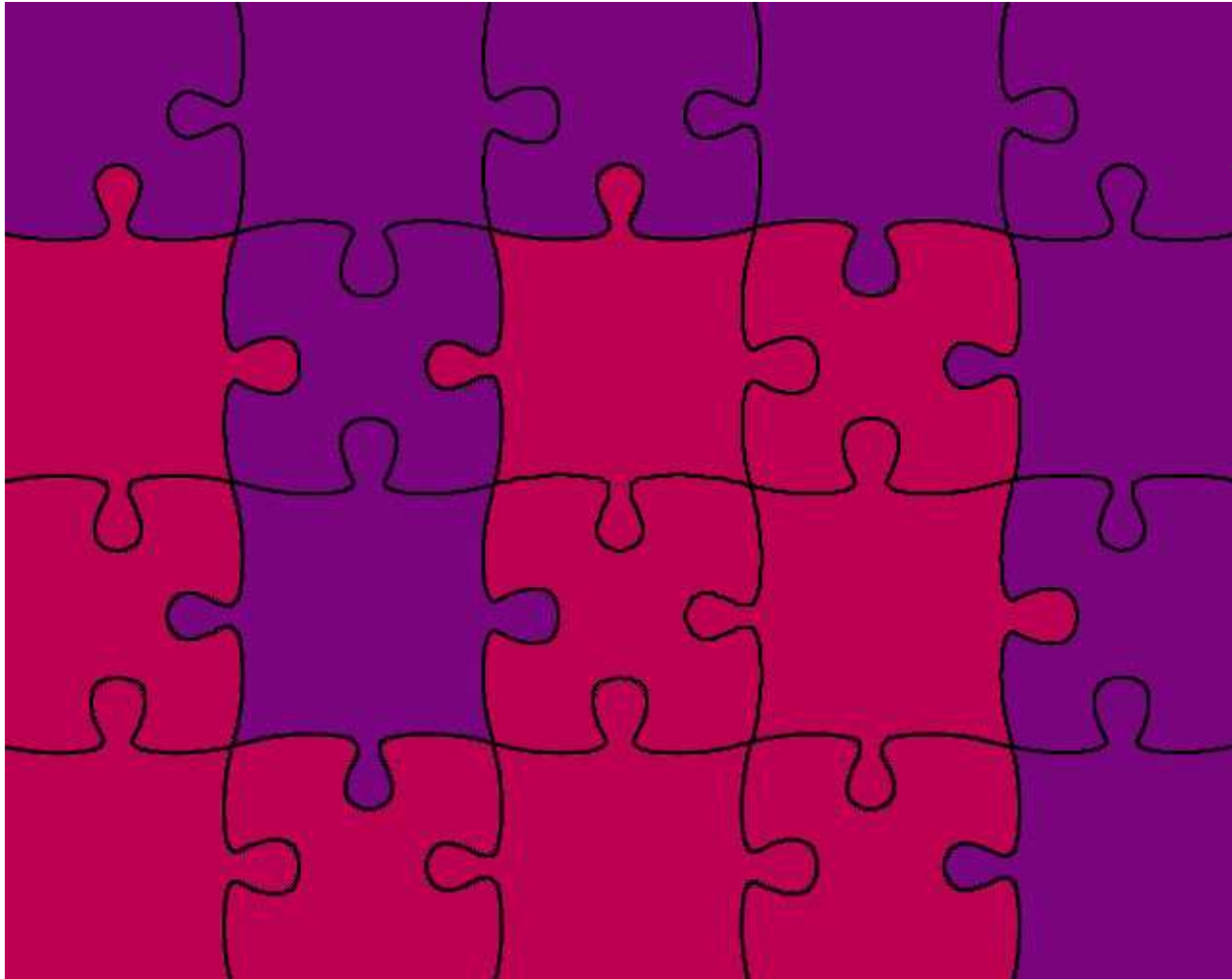


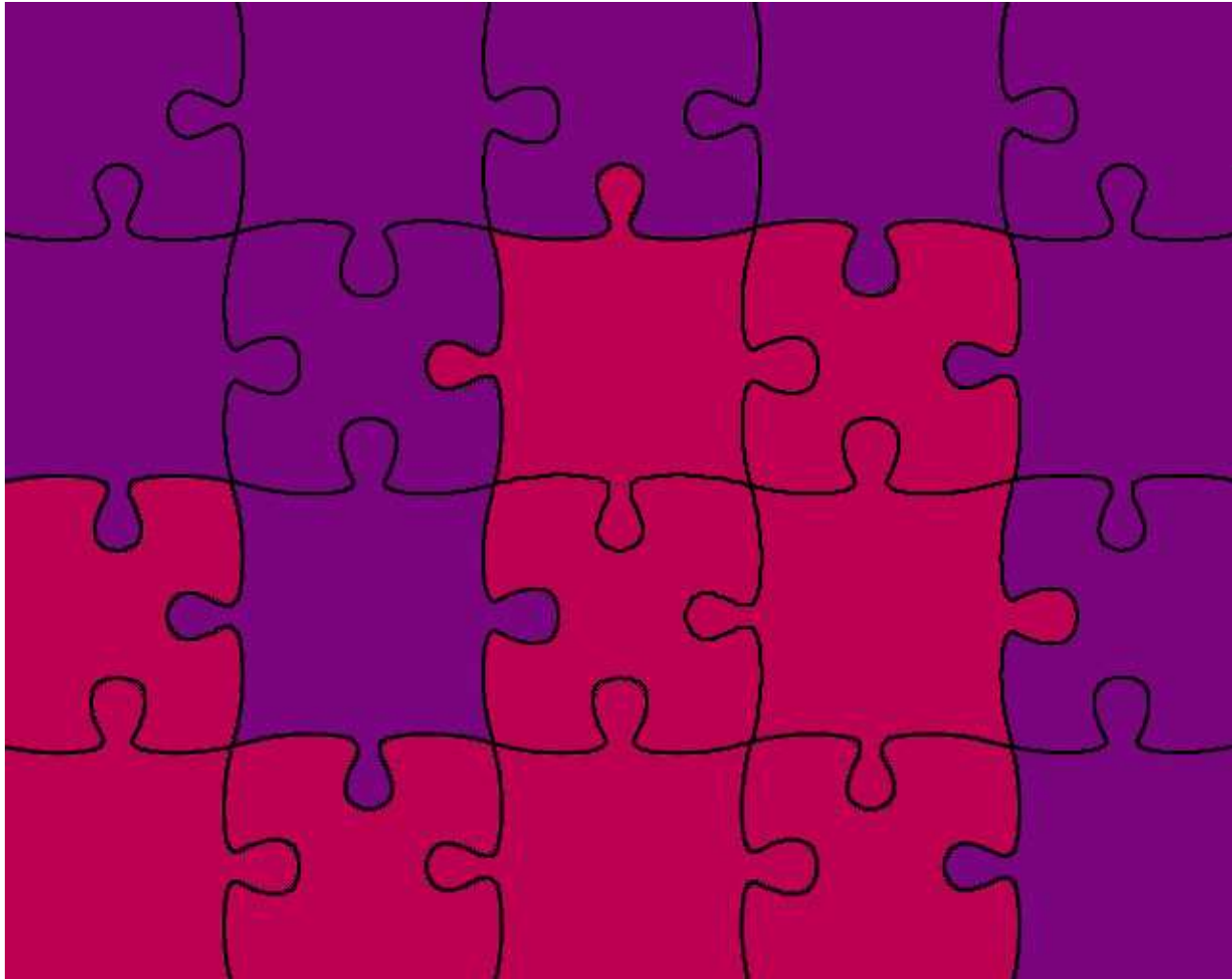


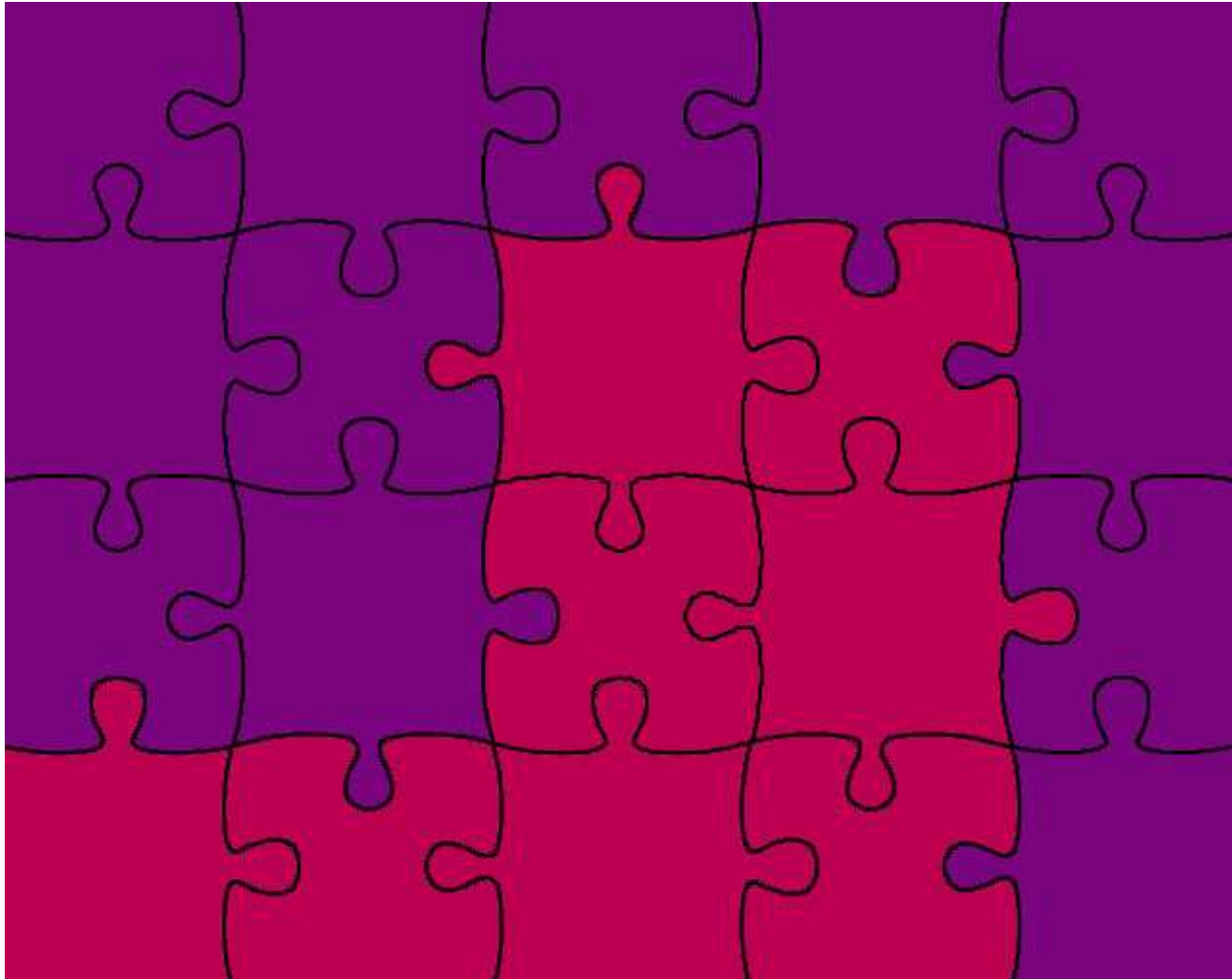


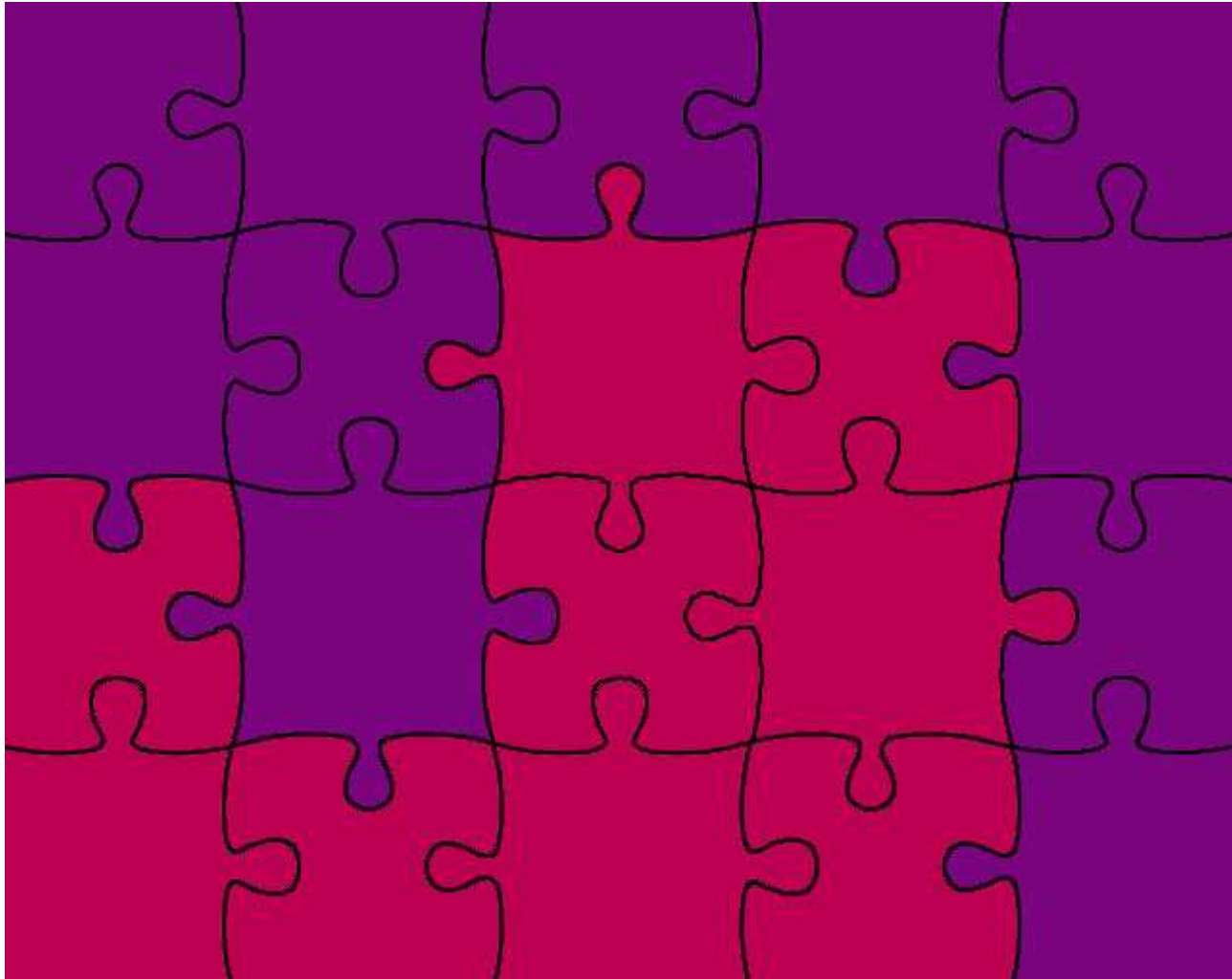


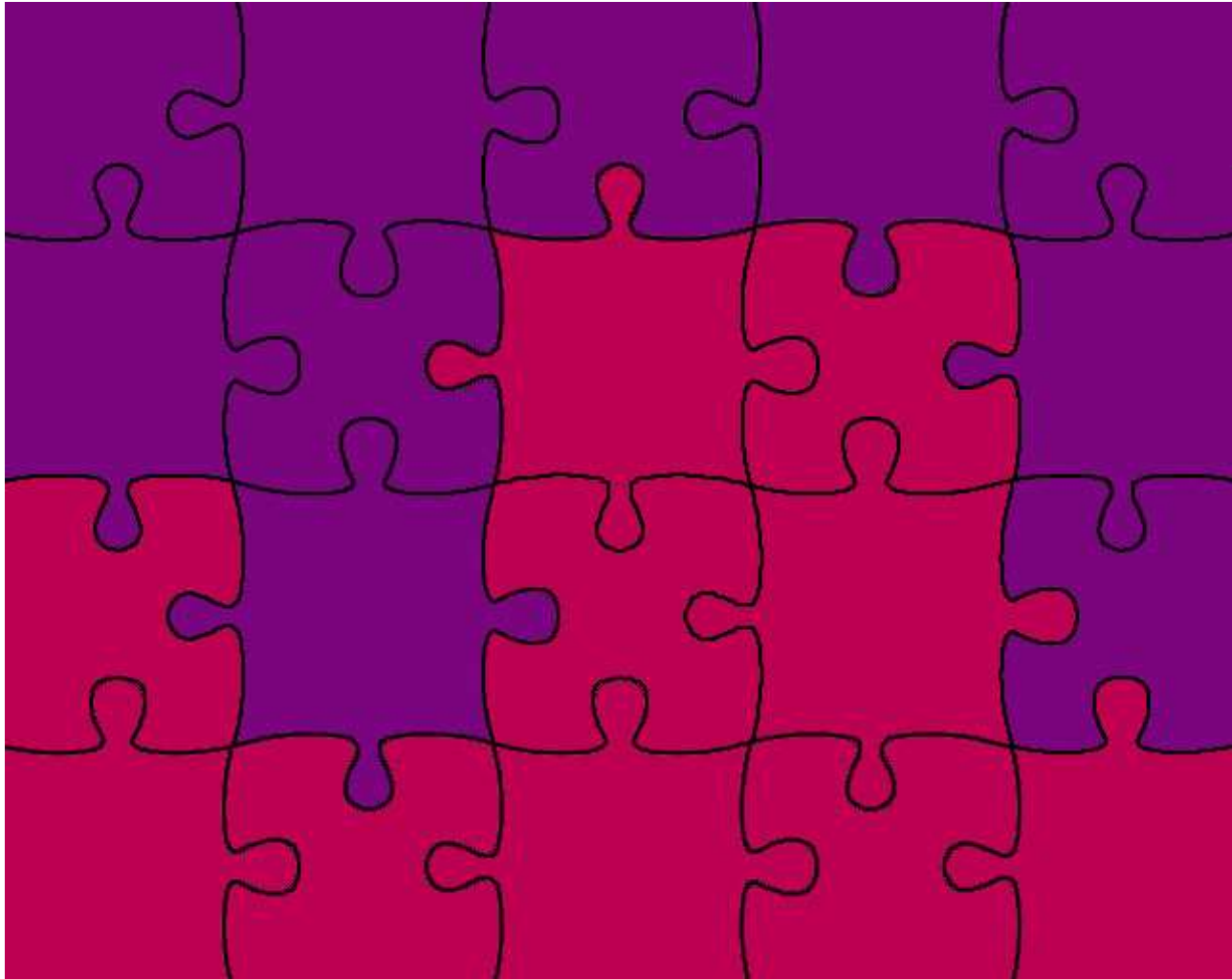


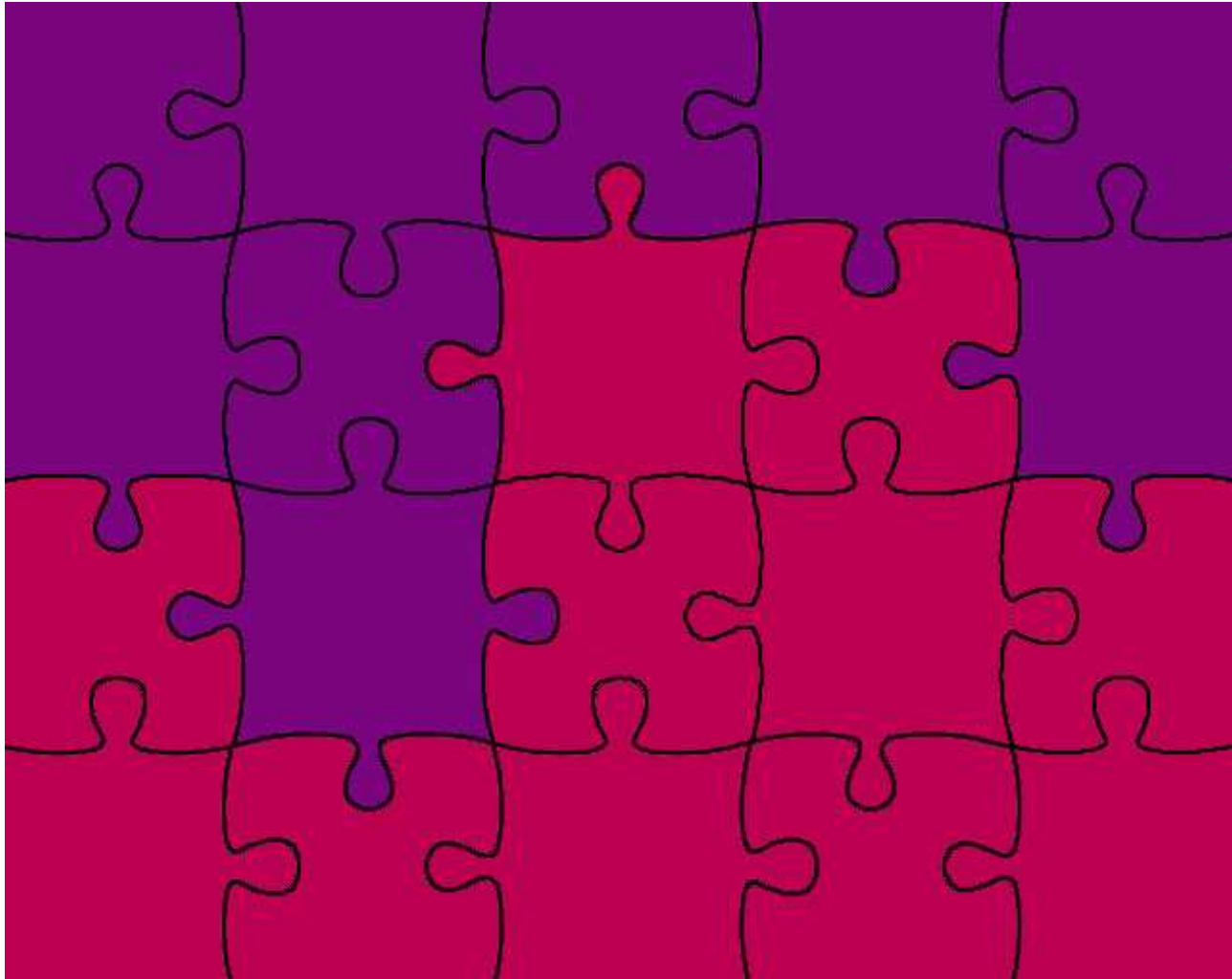


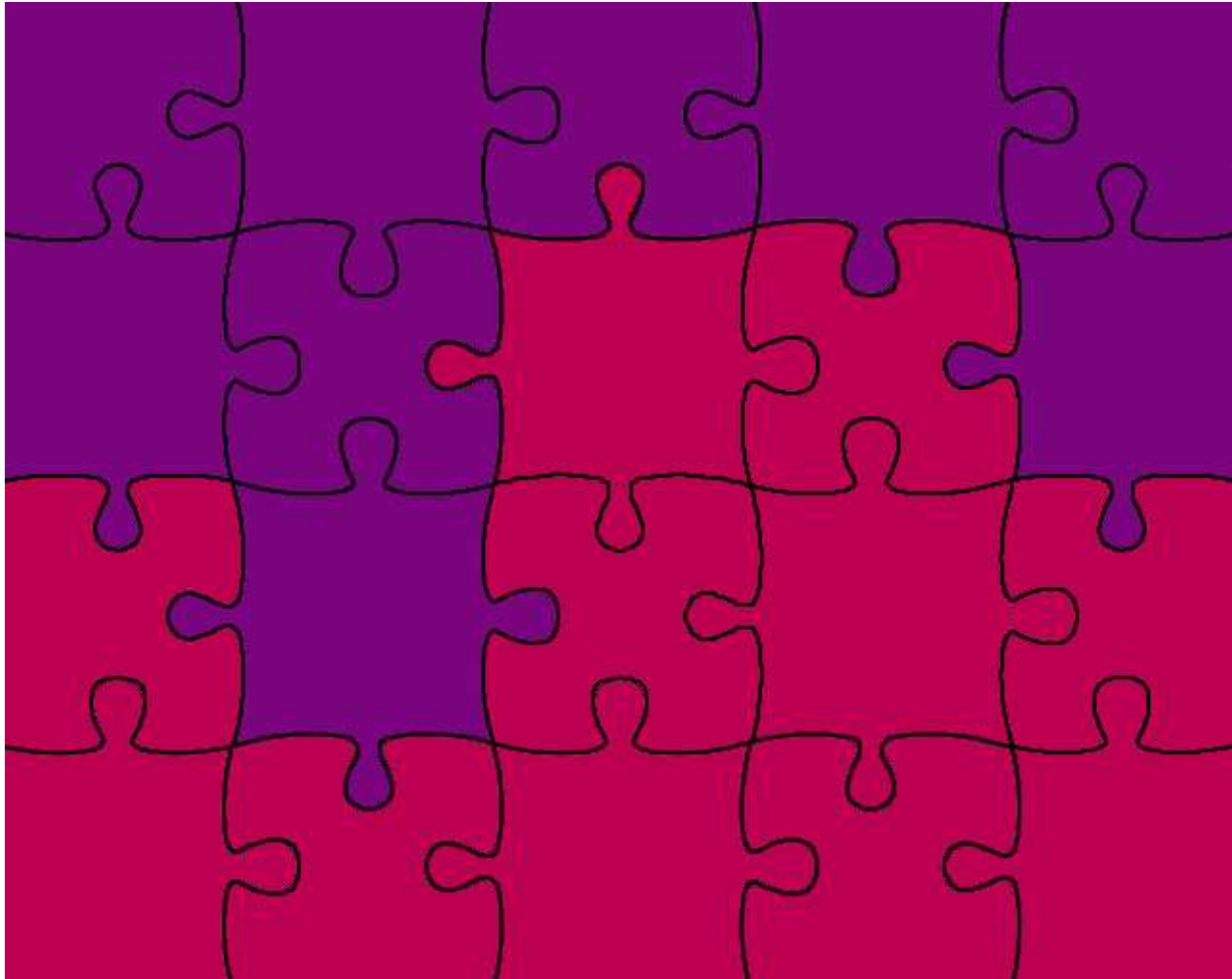


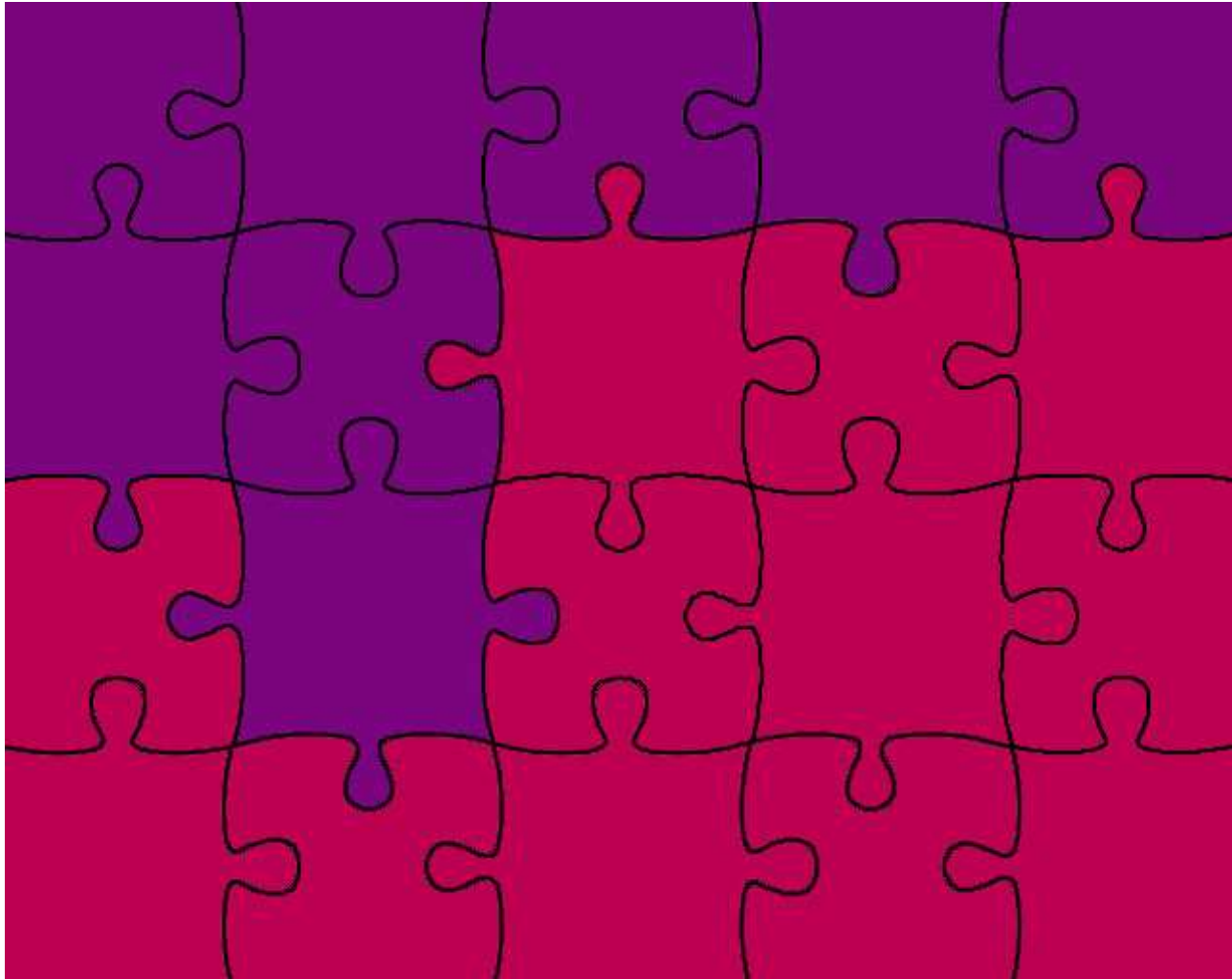


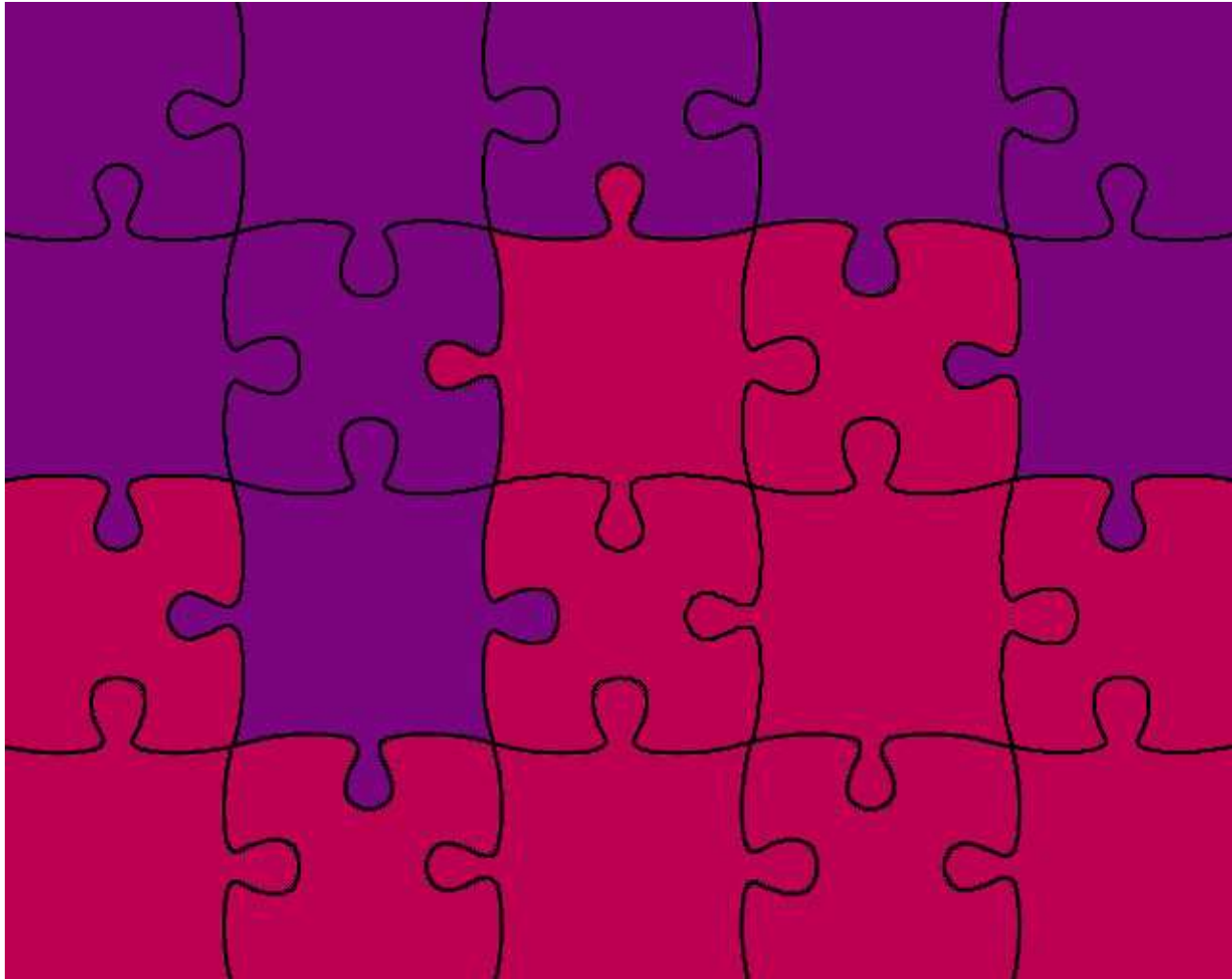


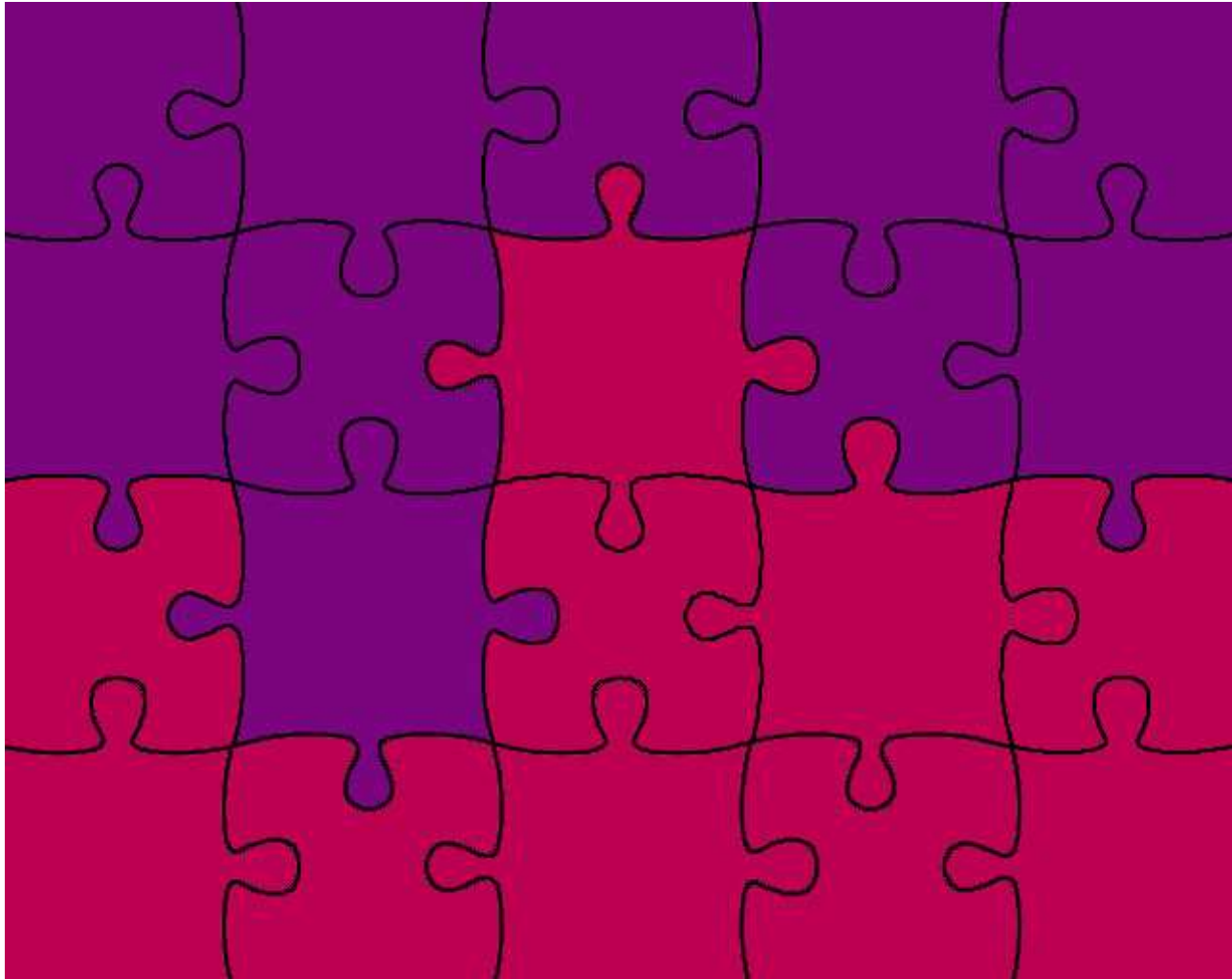


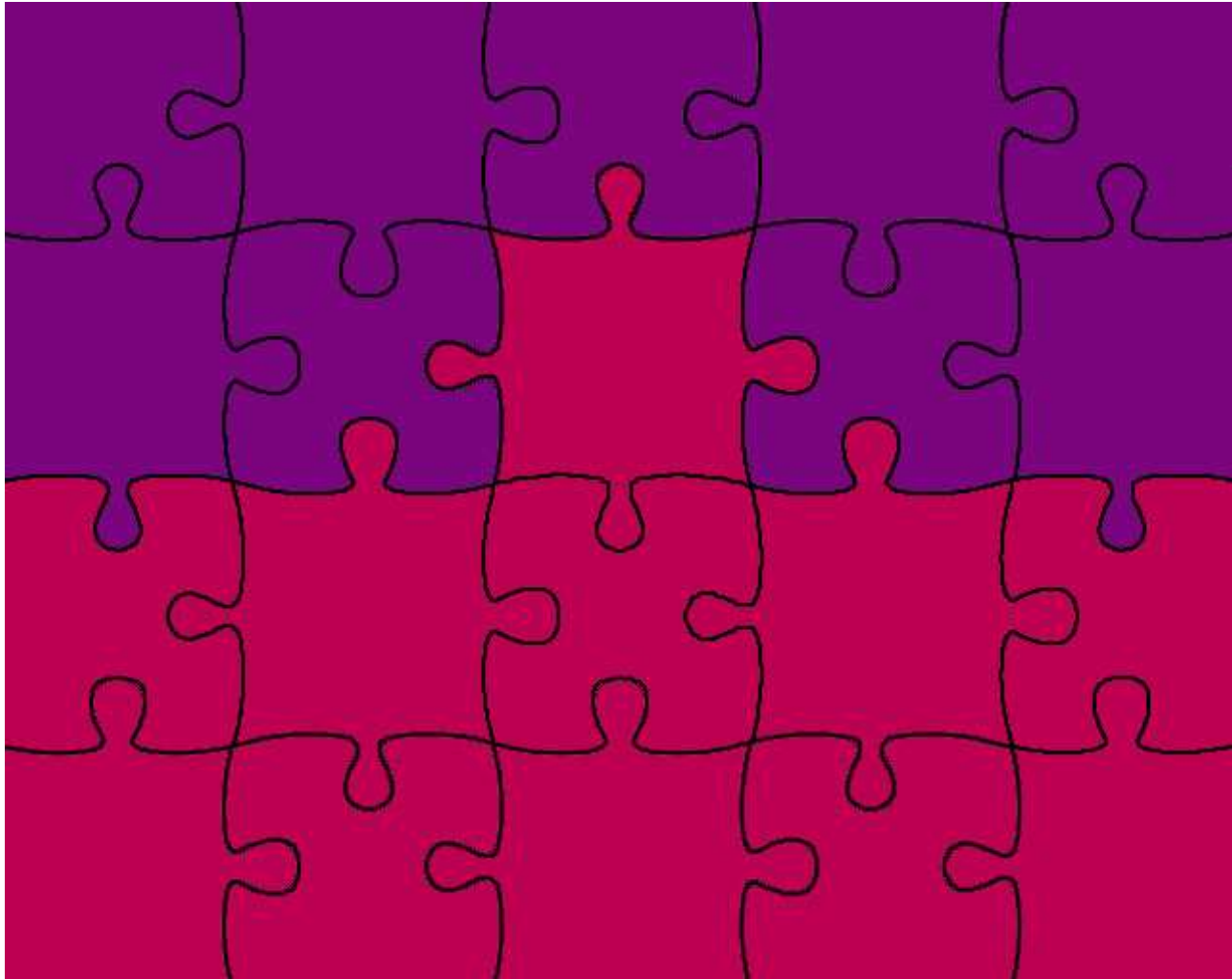


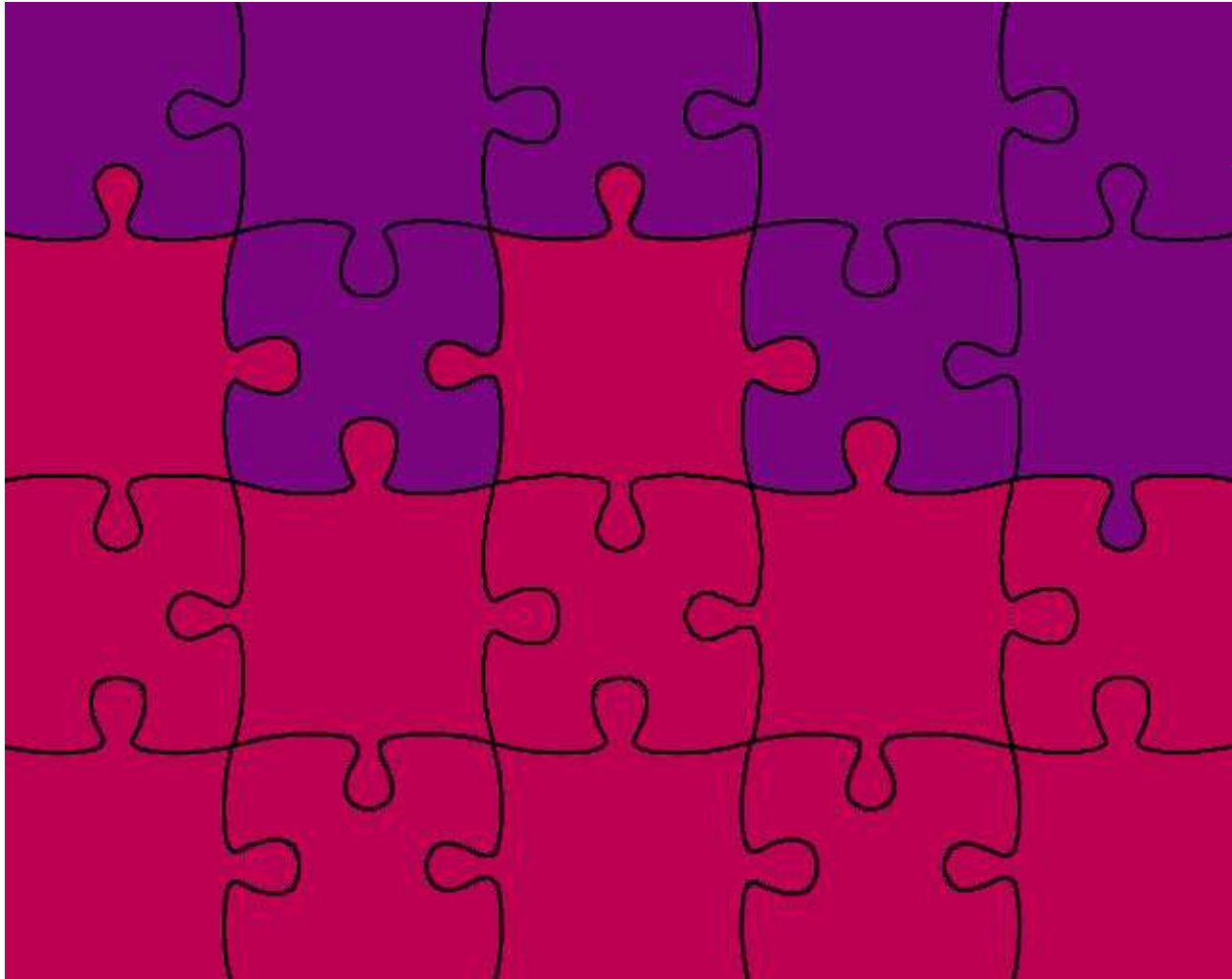


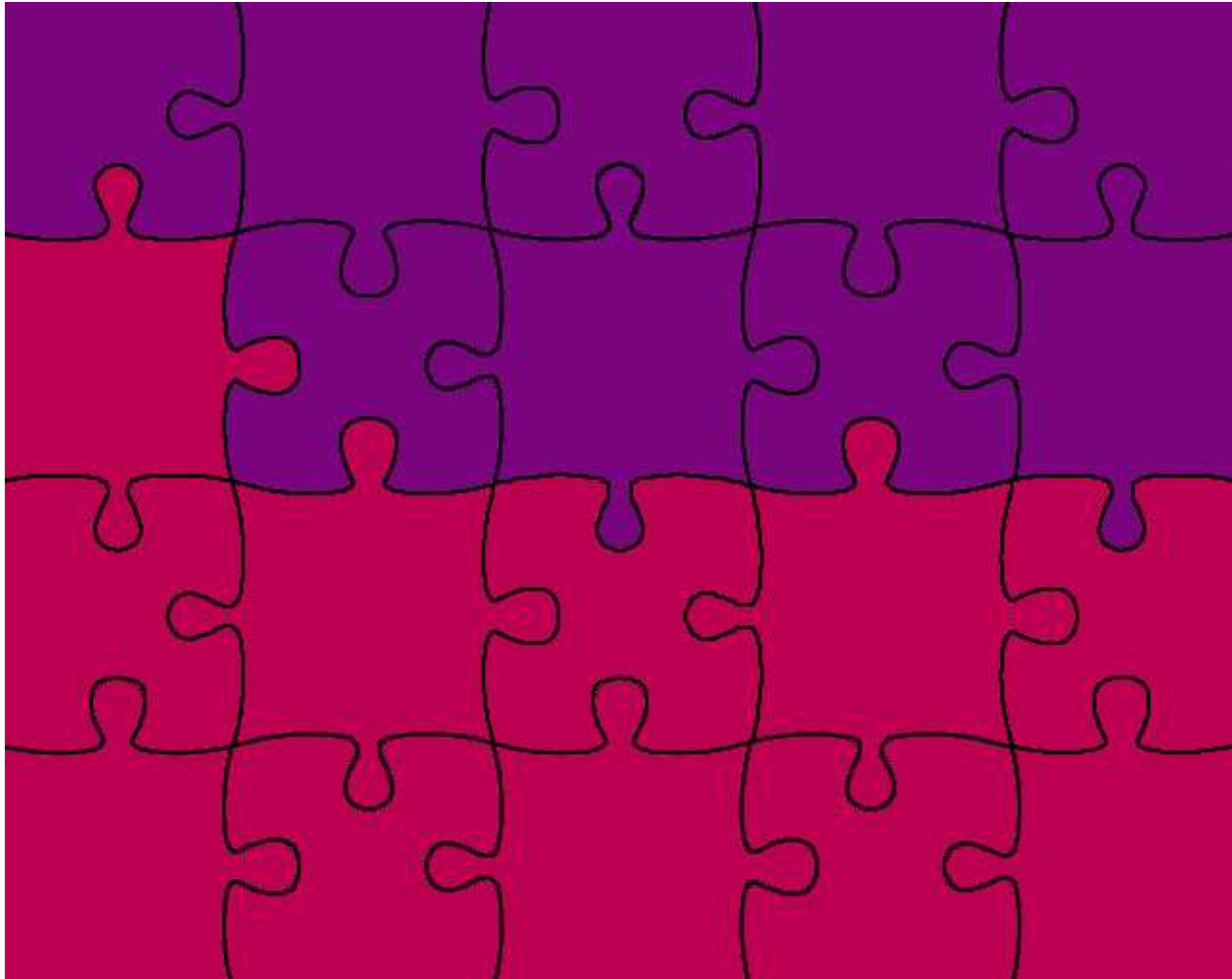


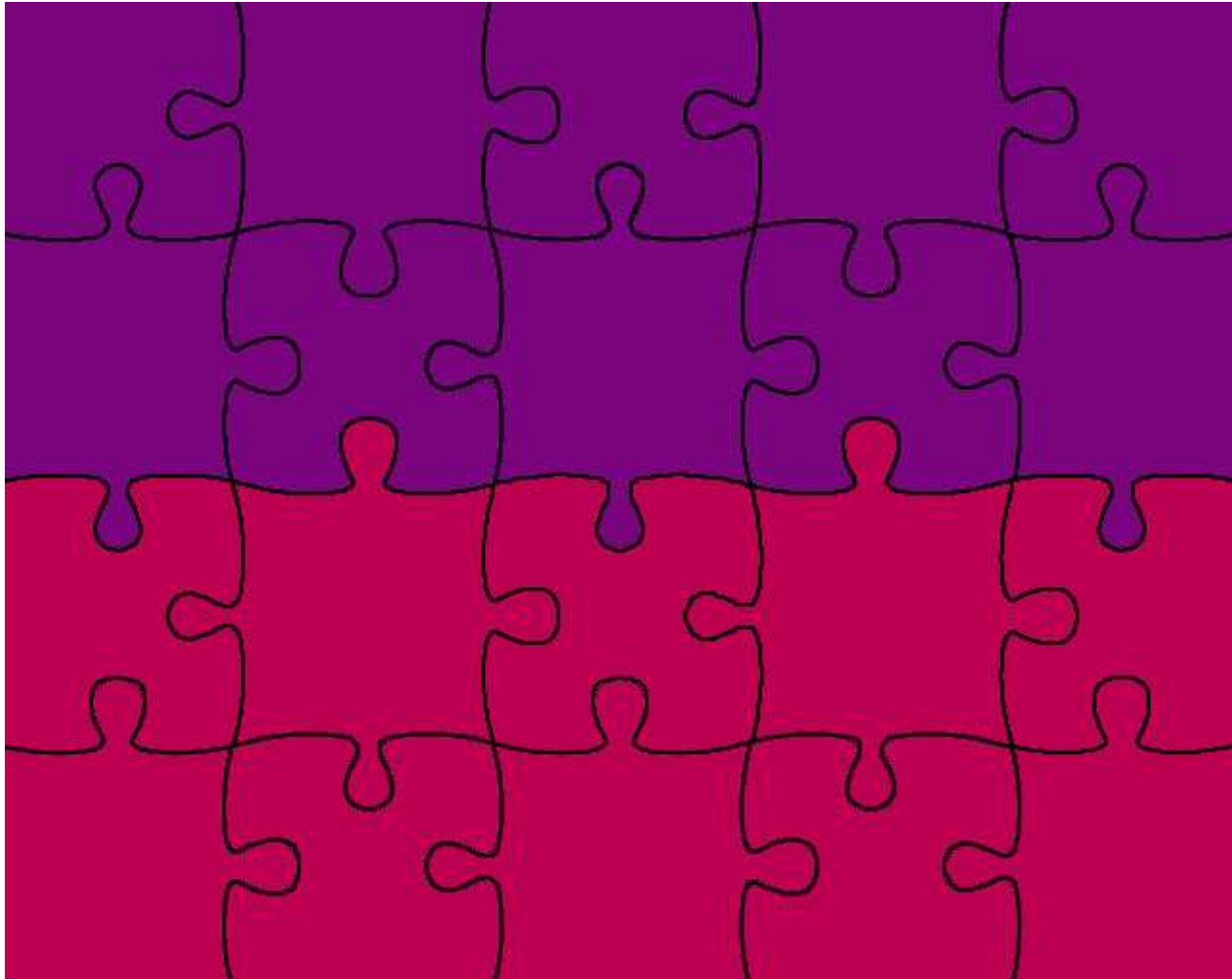


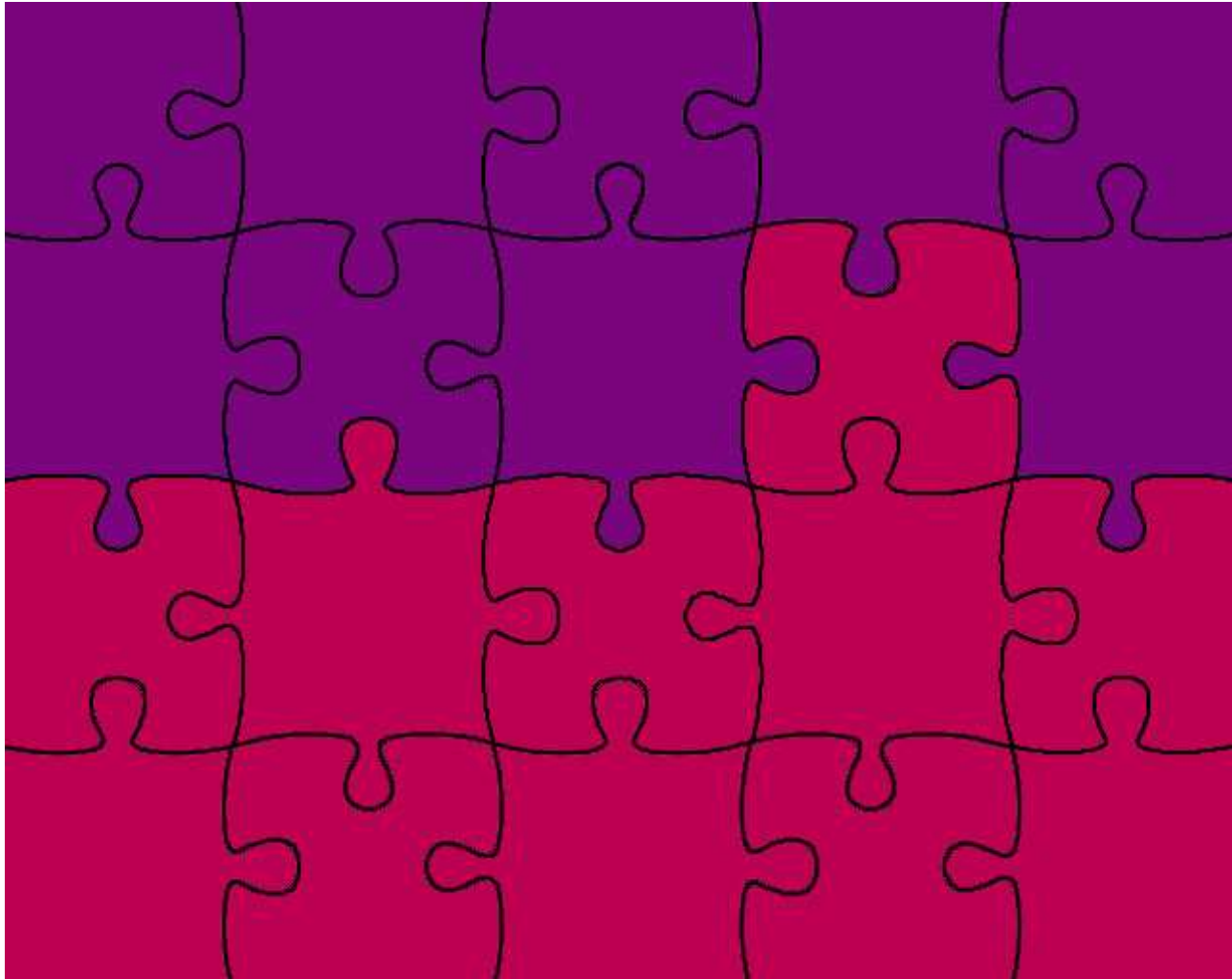


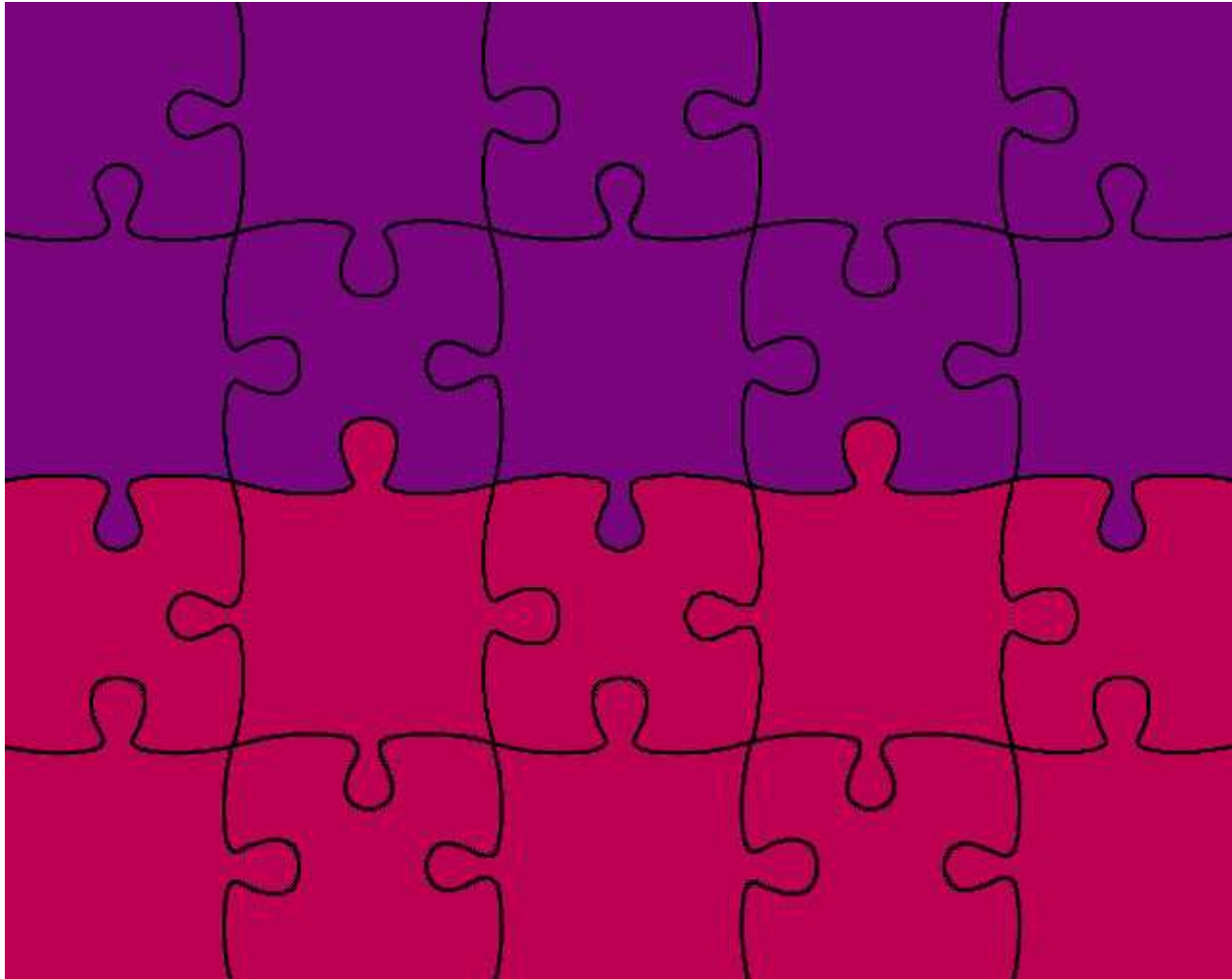


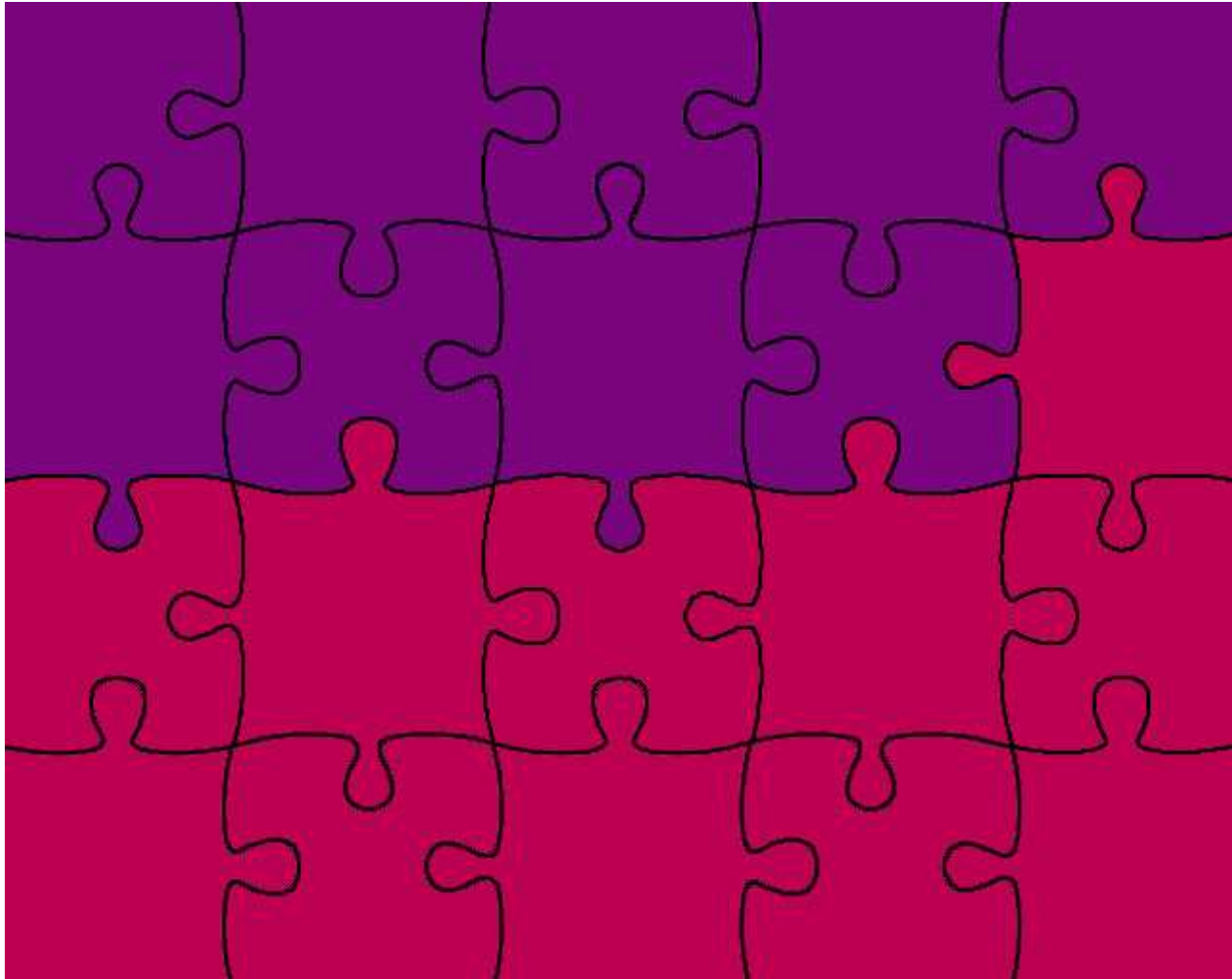




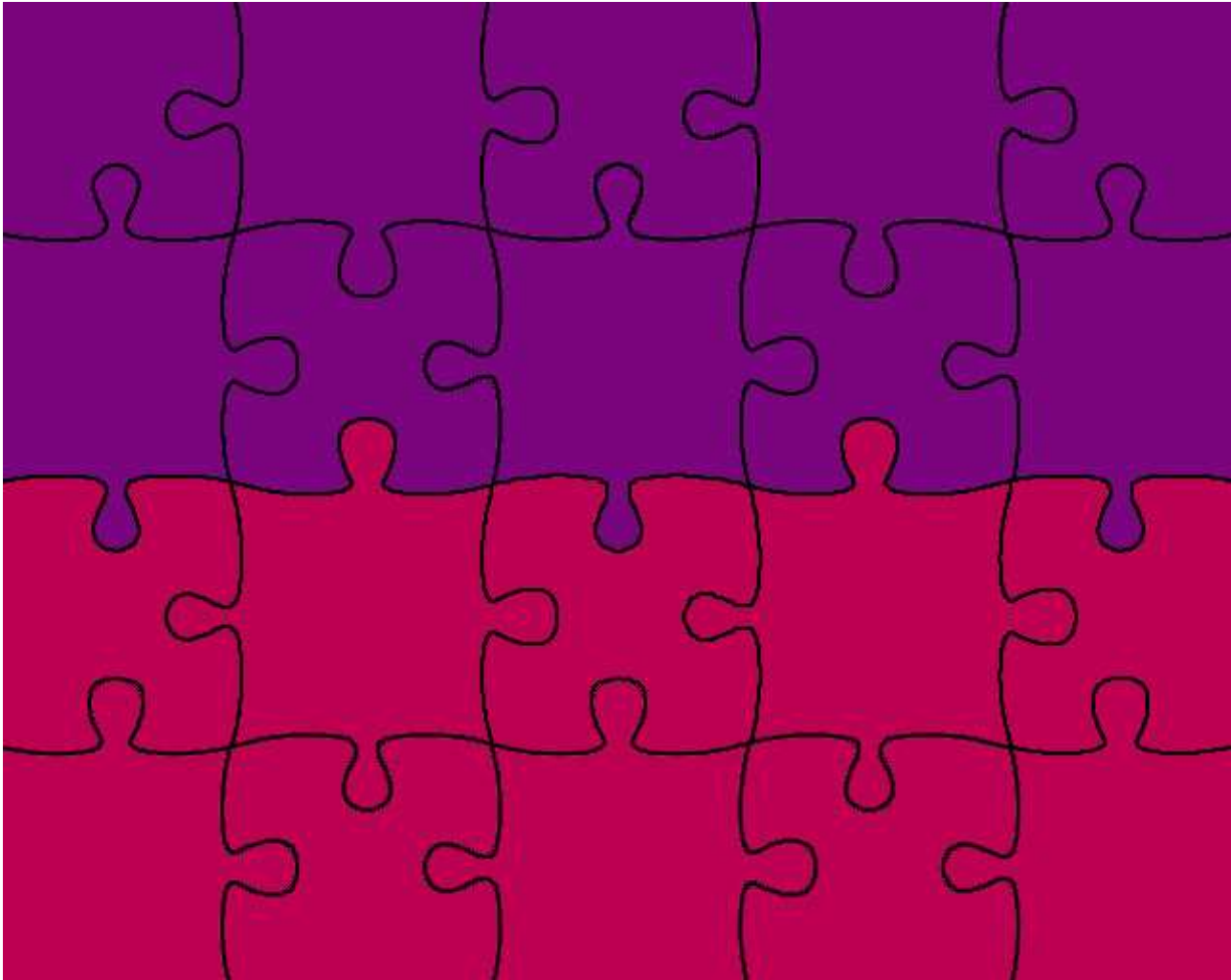






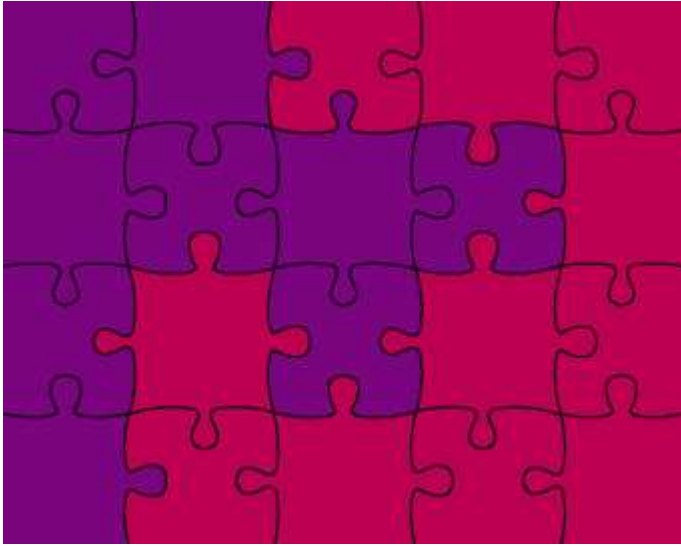


Fin de la ejecución

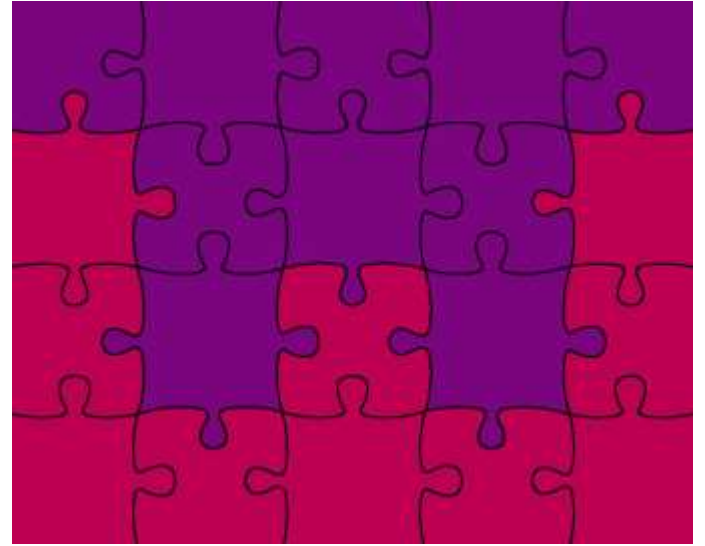
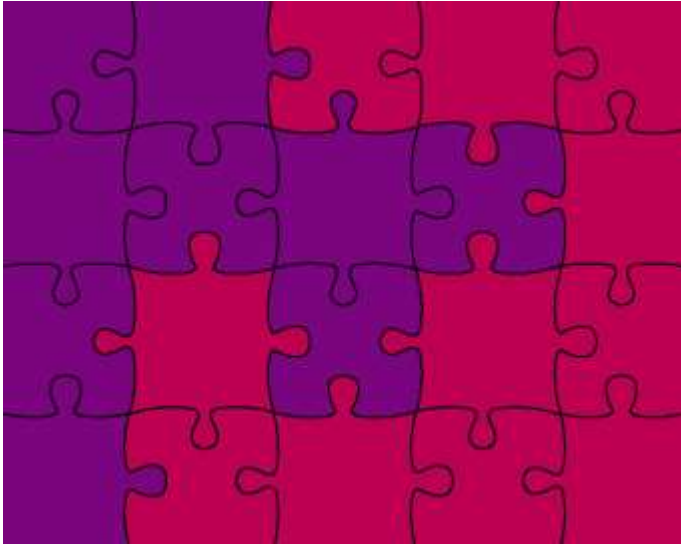


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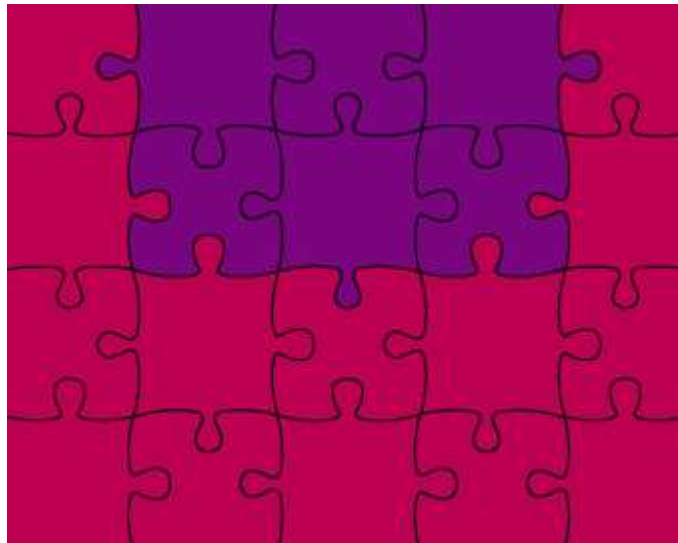
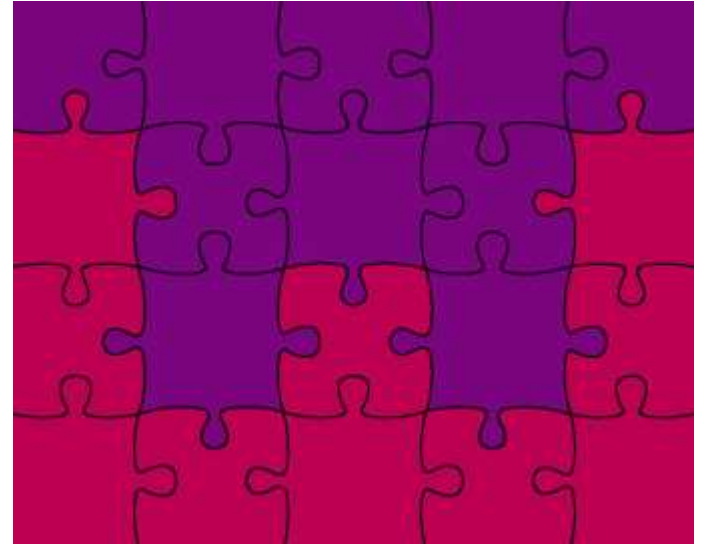
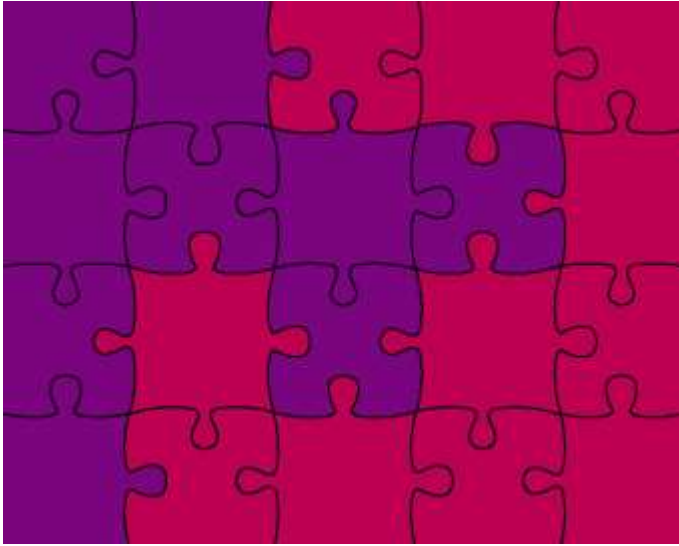
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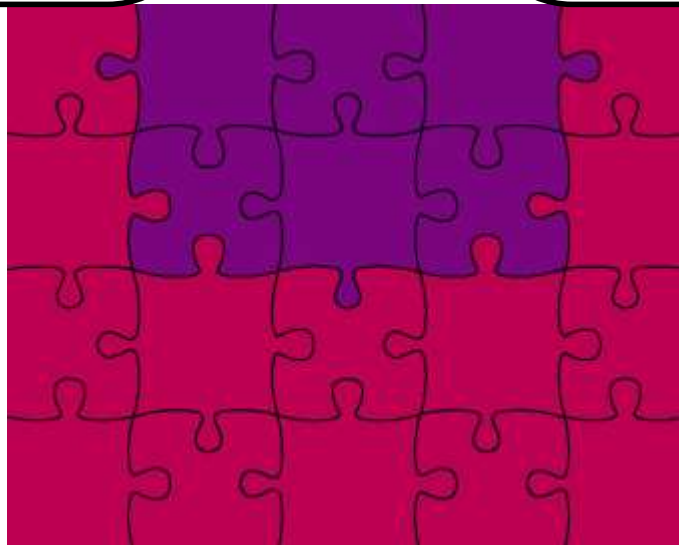
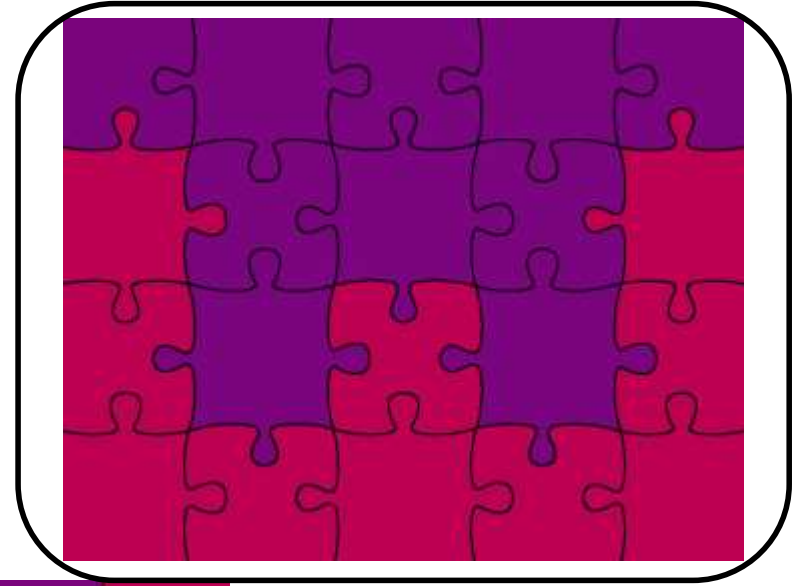
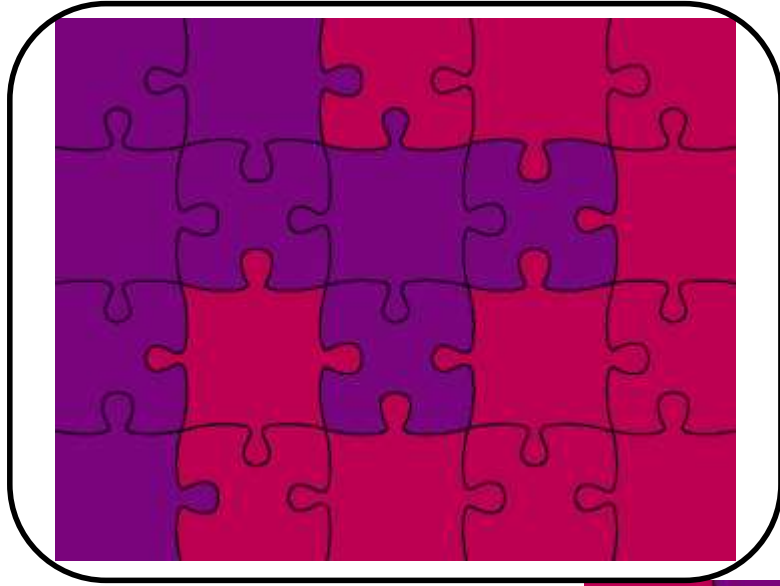
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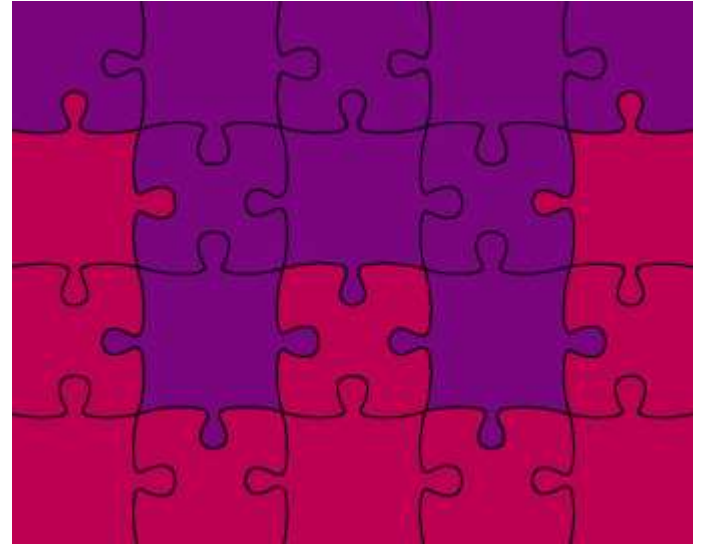
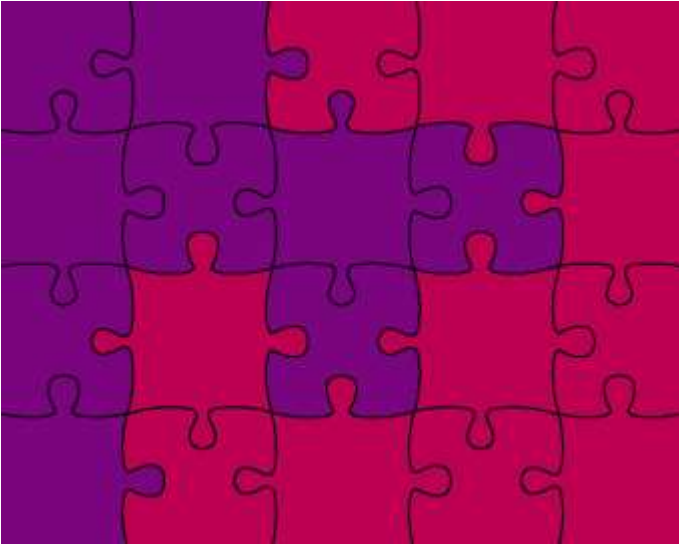
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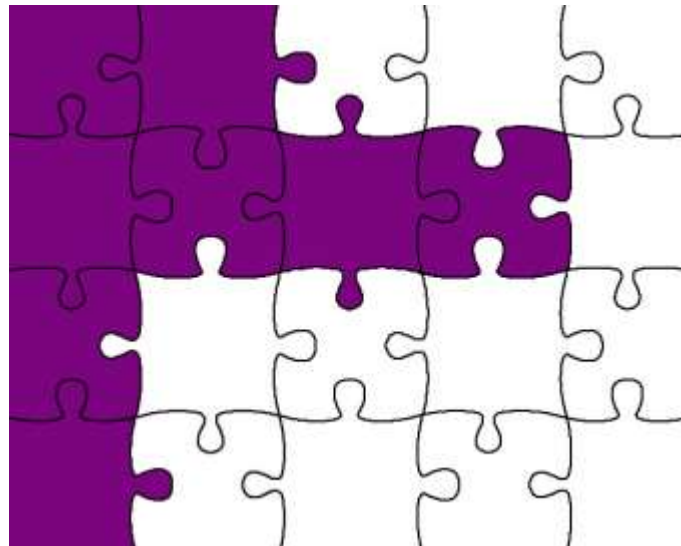
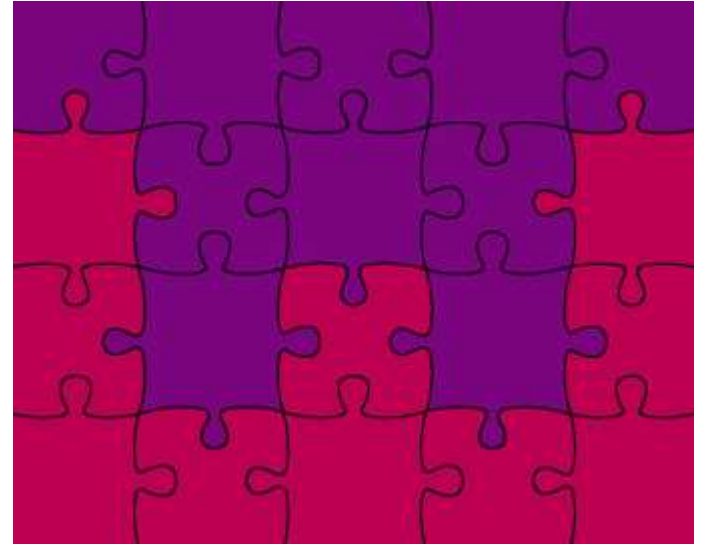
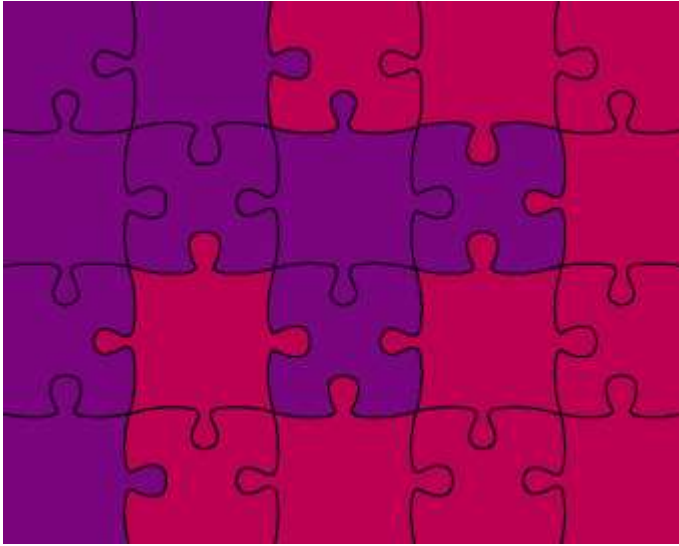
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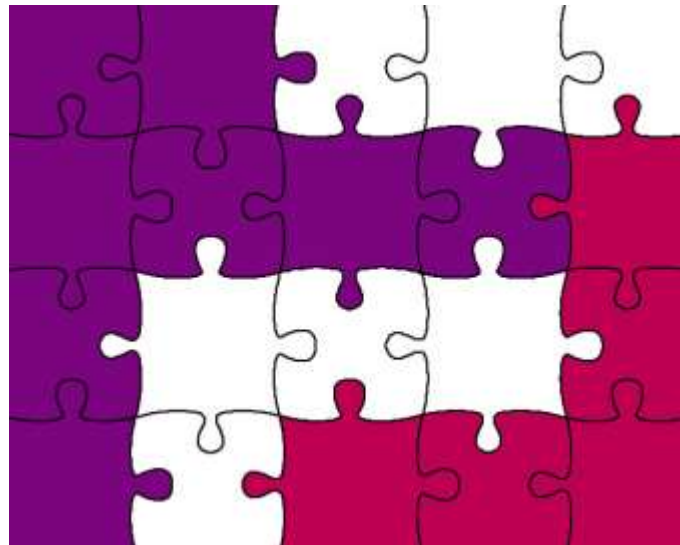
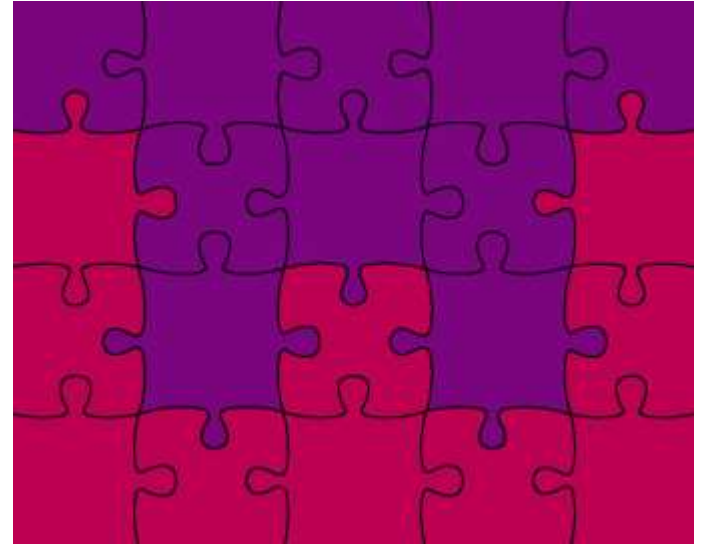
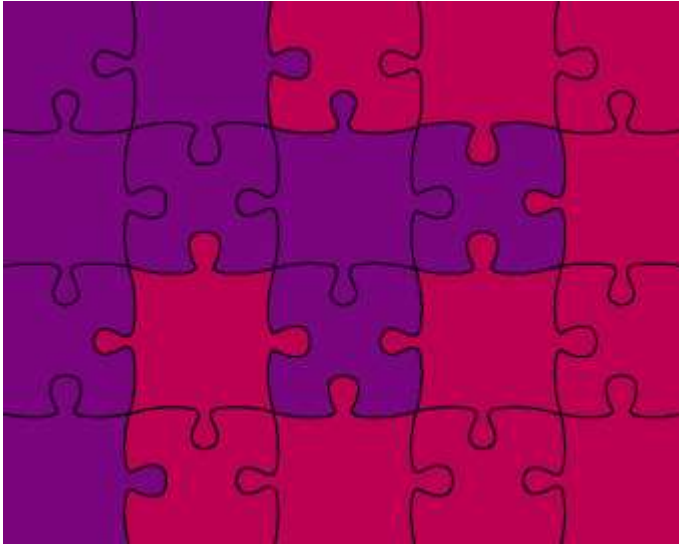
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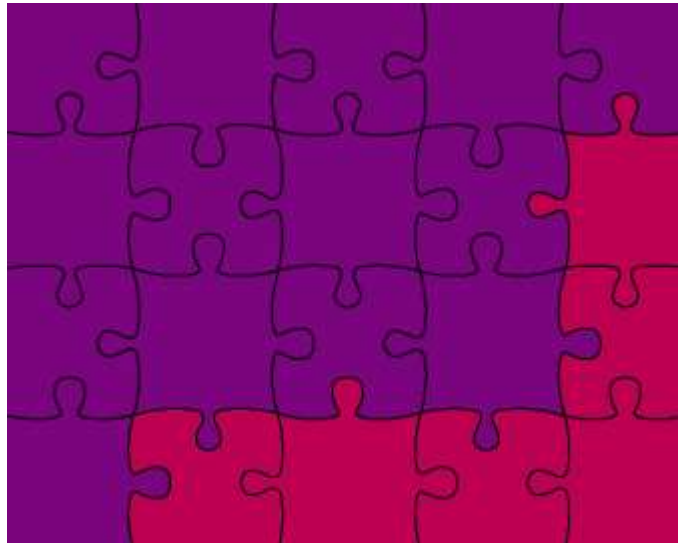
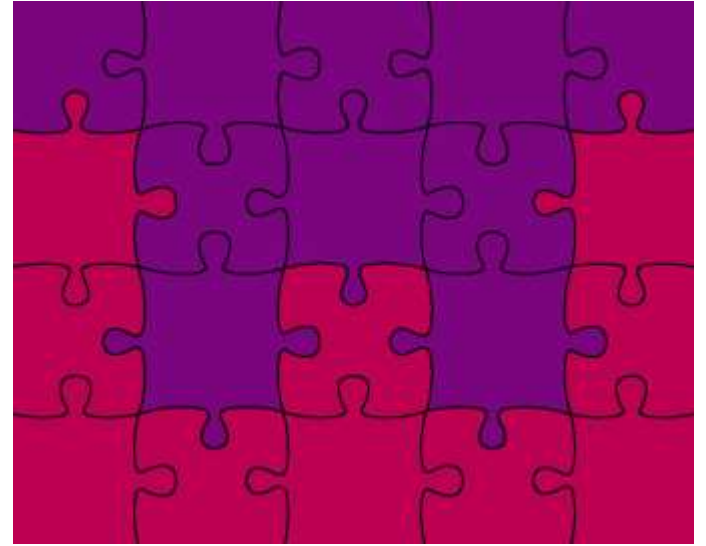
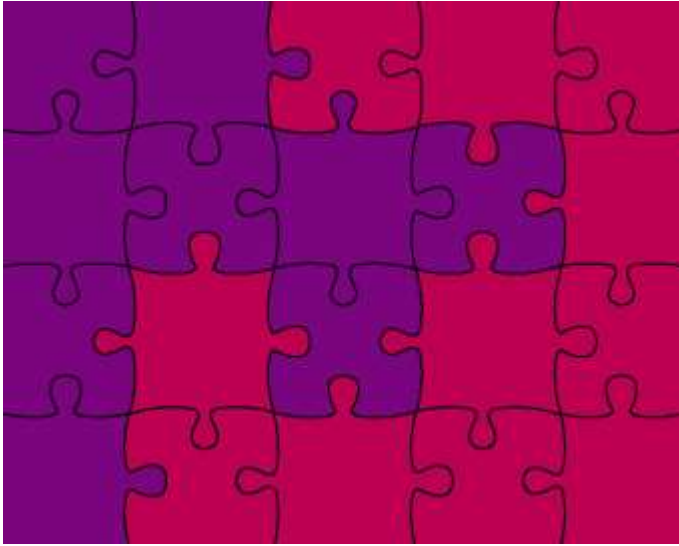
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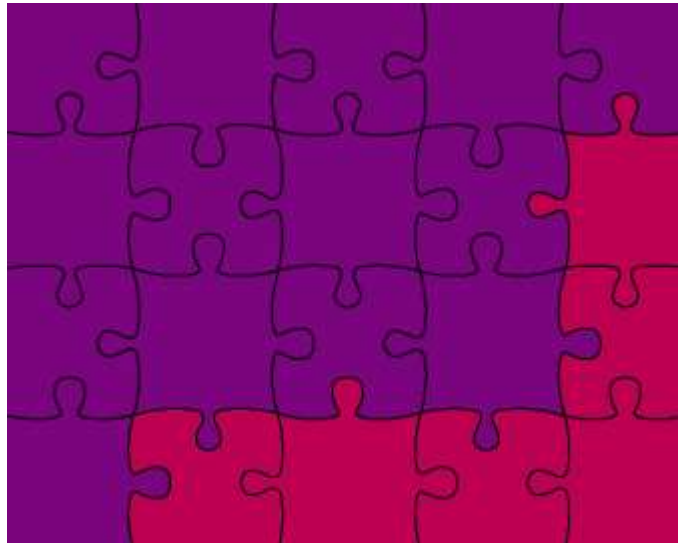
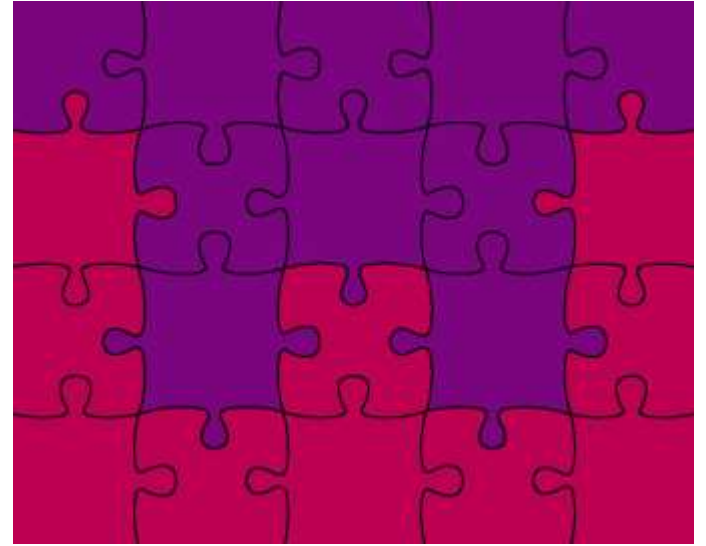
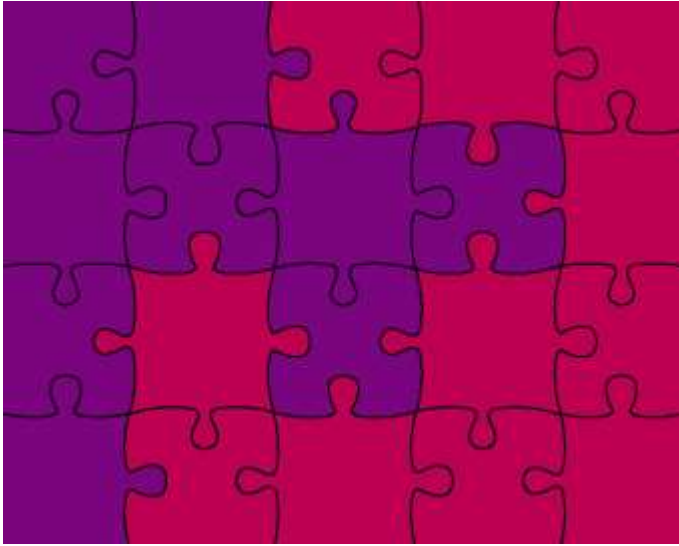
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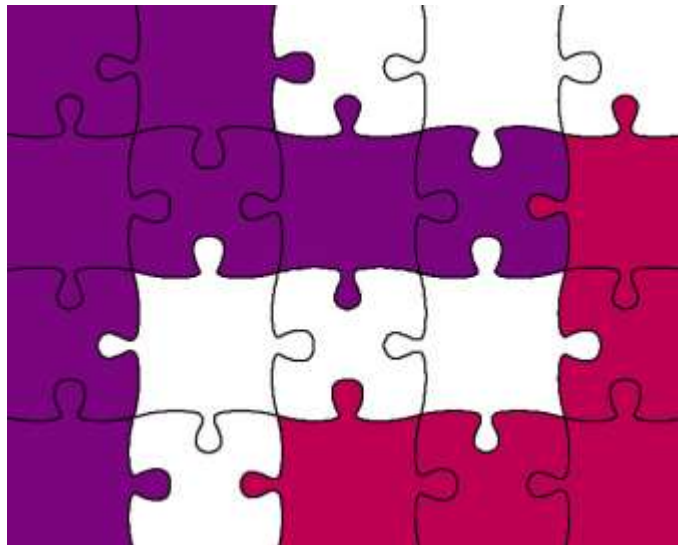
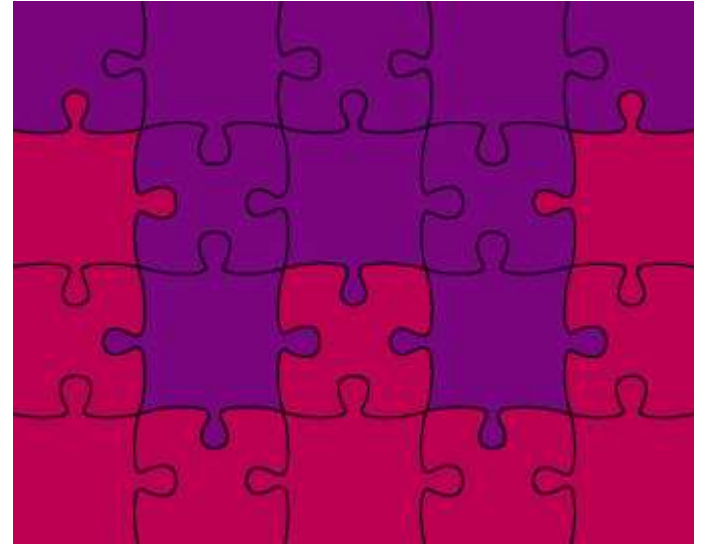
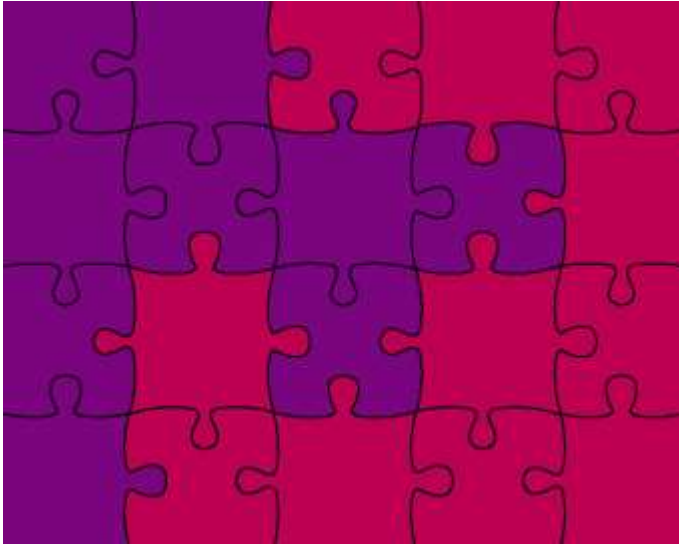
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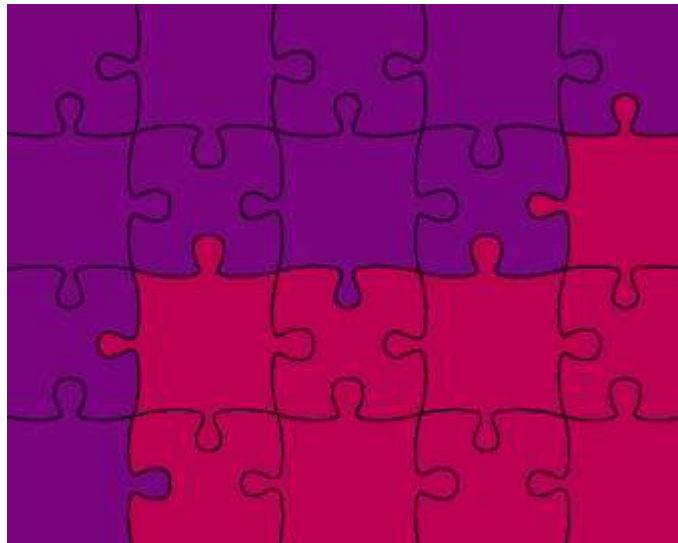
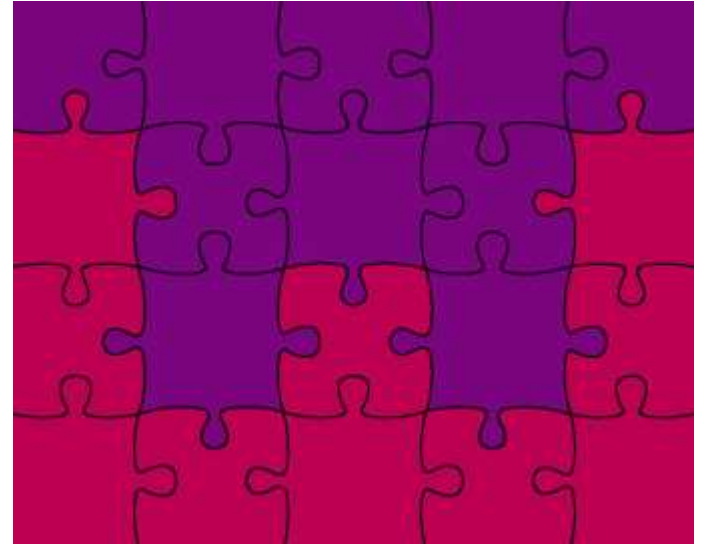
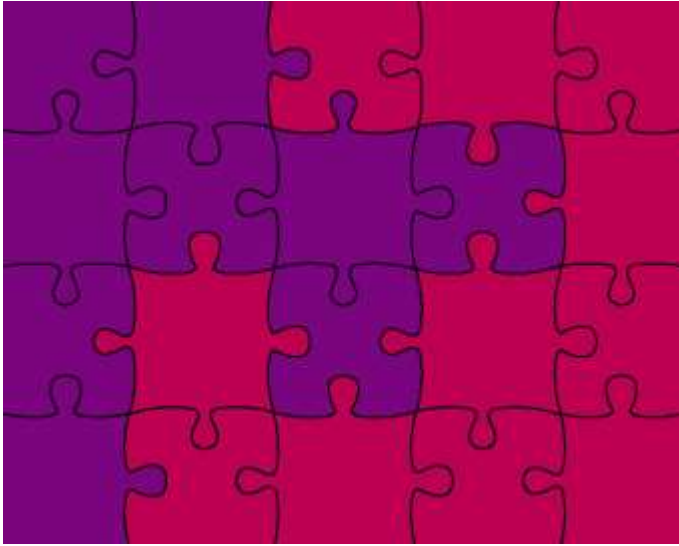
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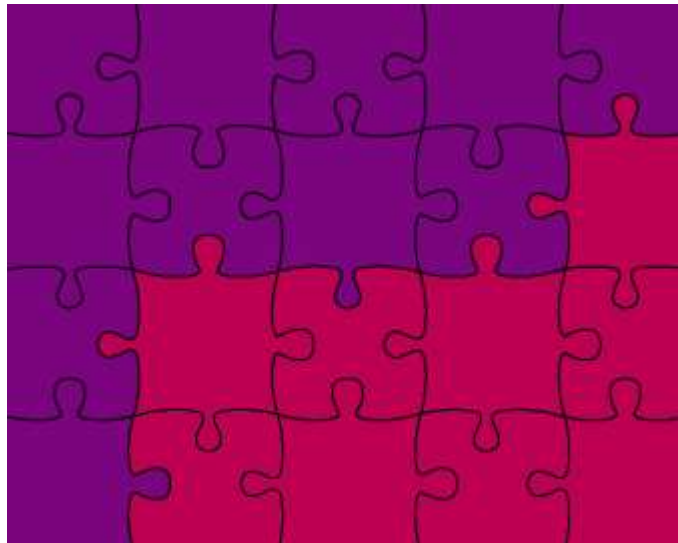
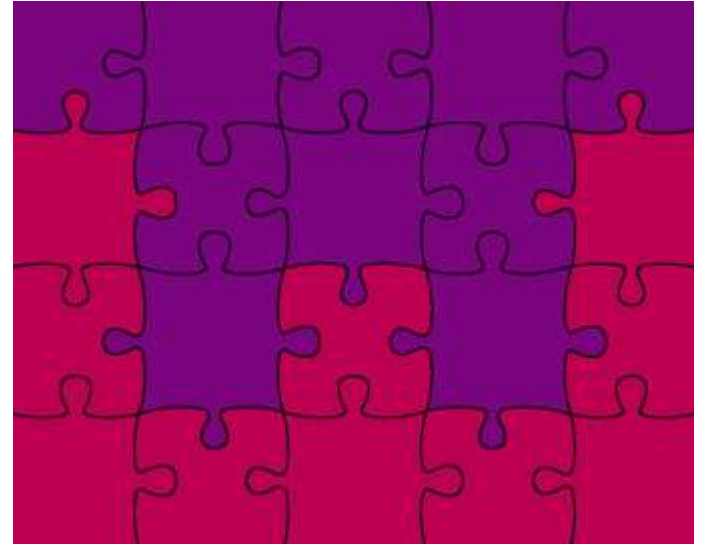
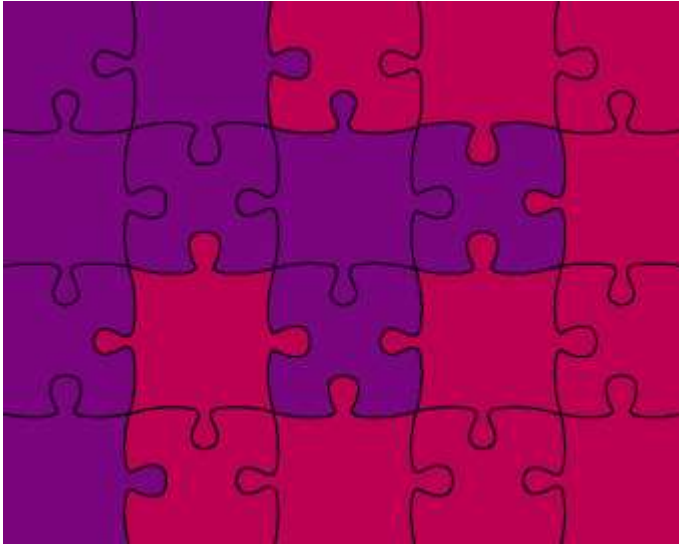
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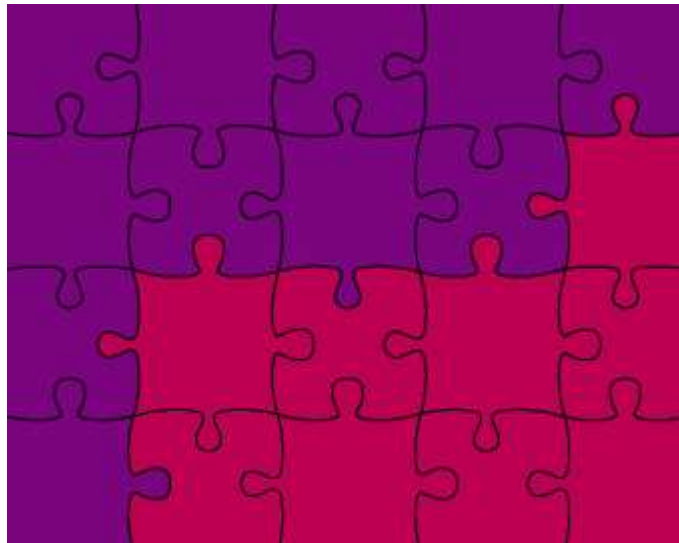
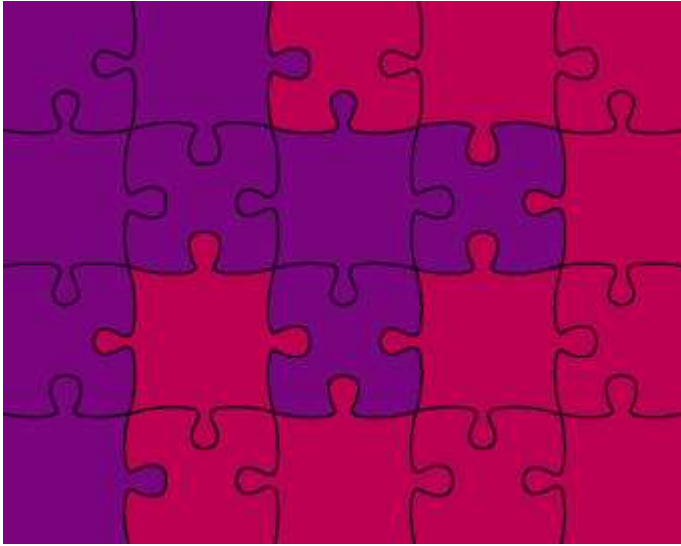
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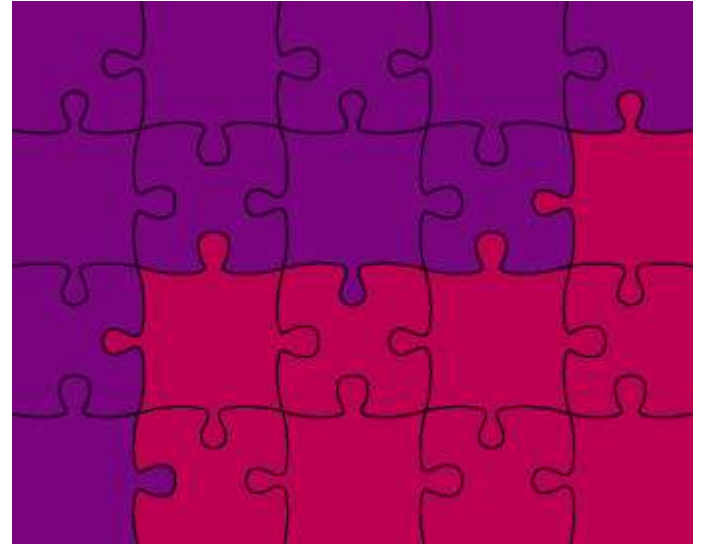
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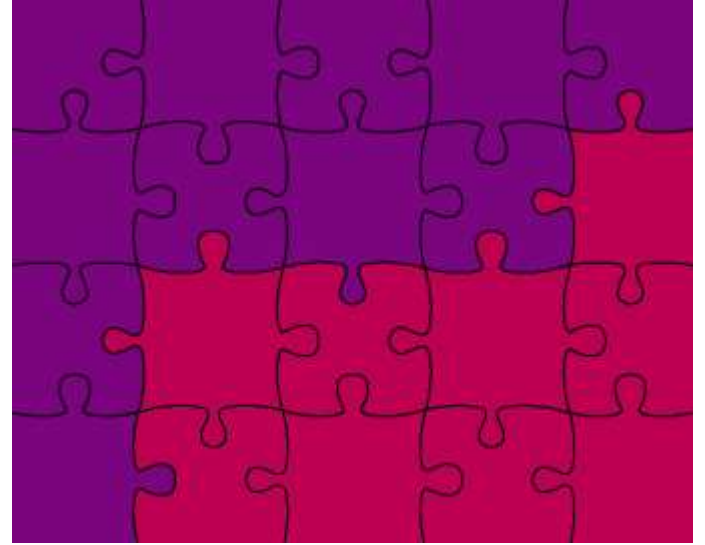
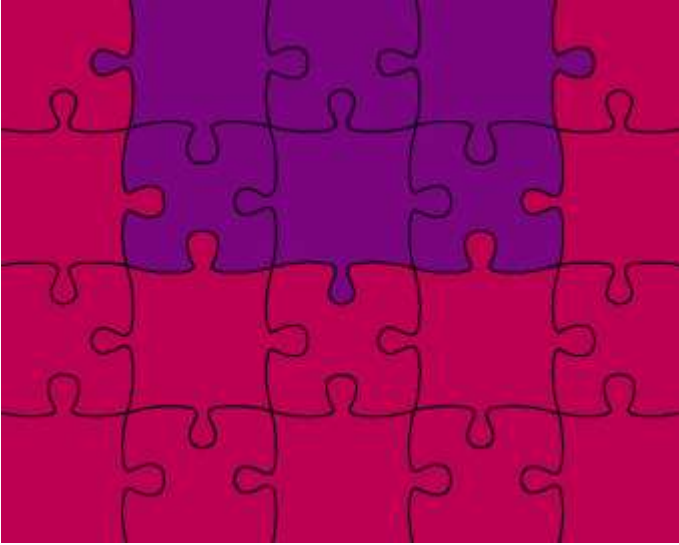
Mejora de la población



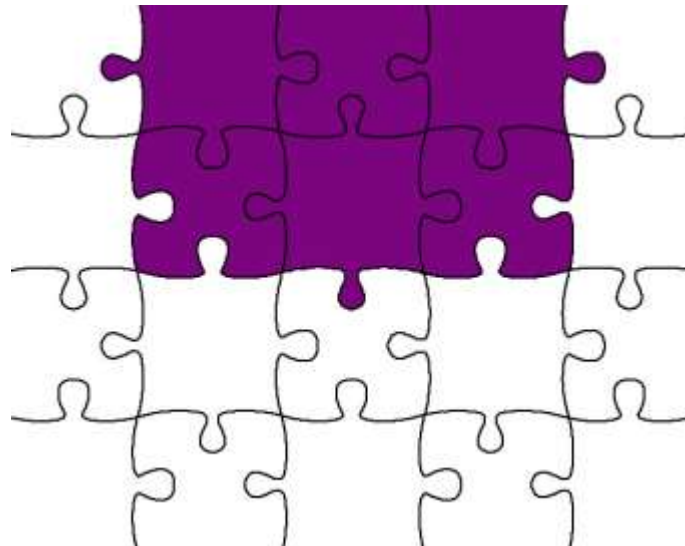
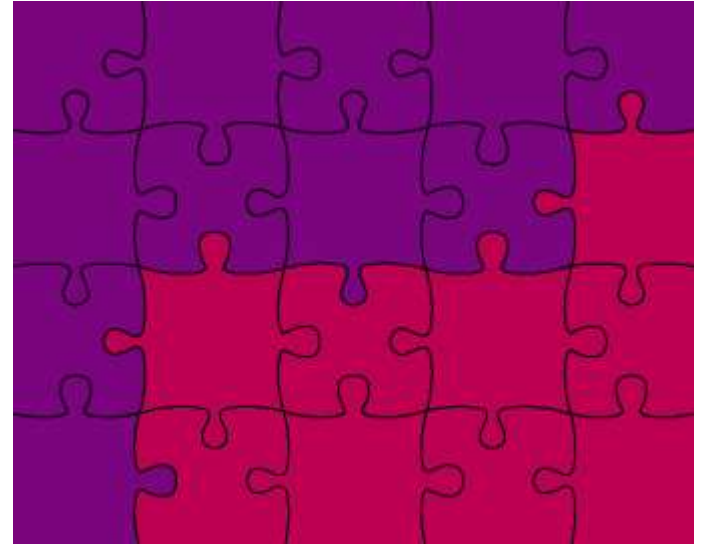
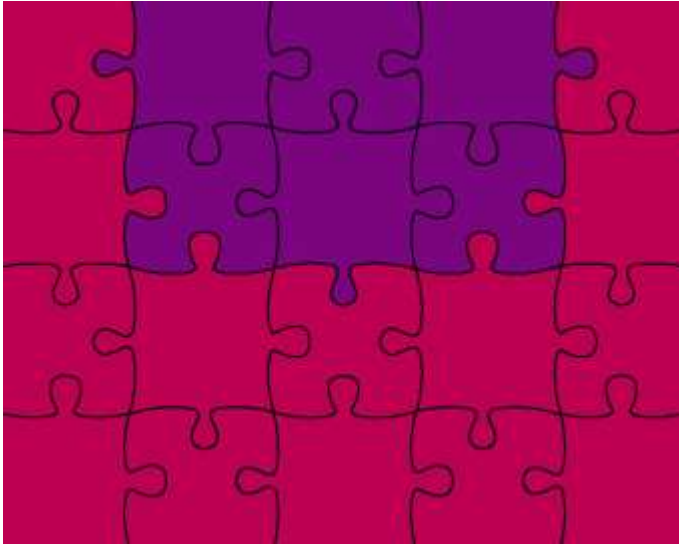
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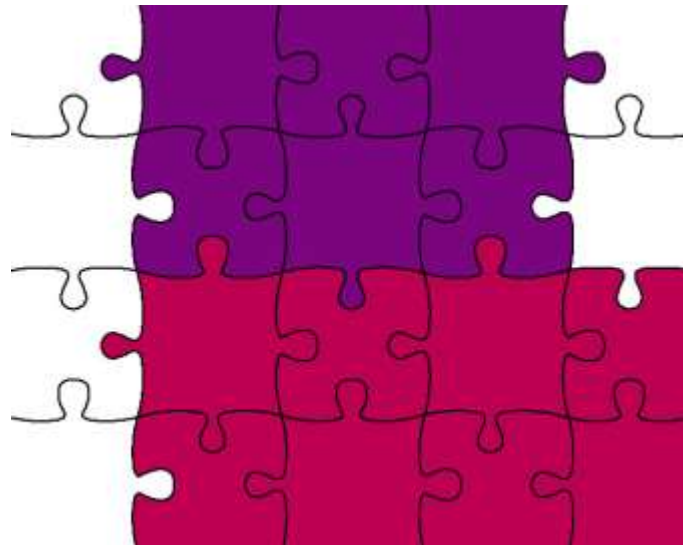
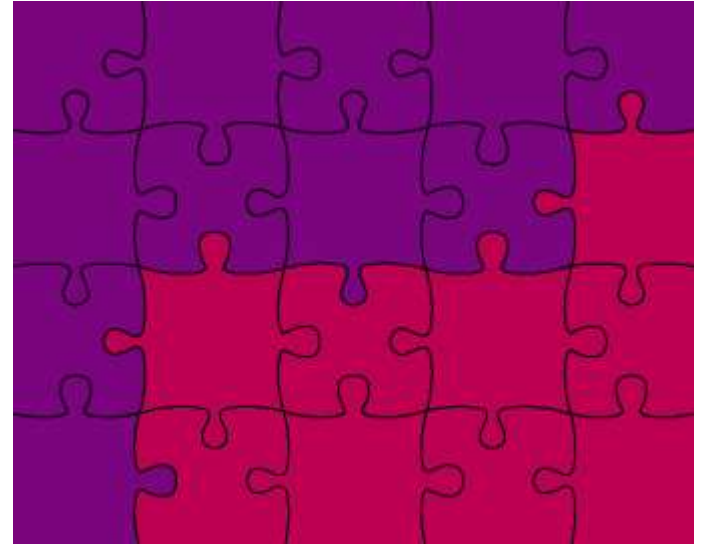
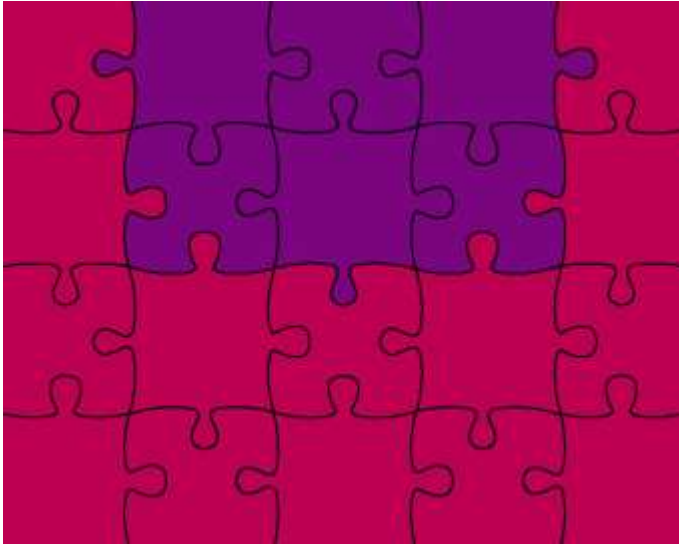
Combina soluciones



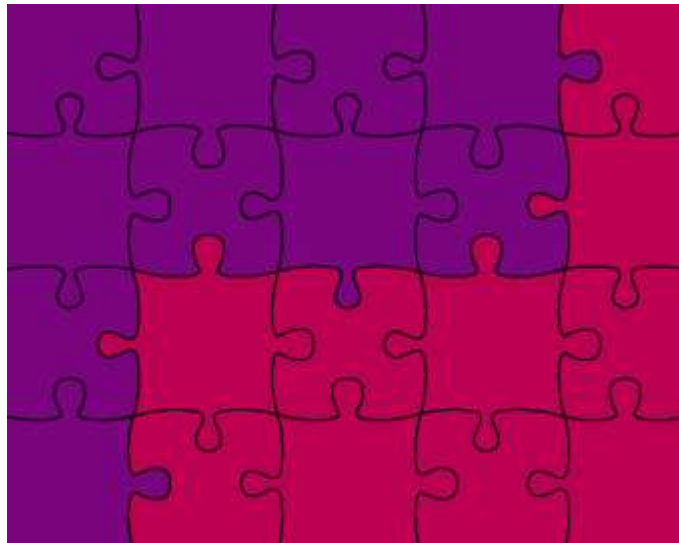
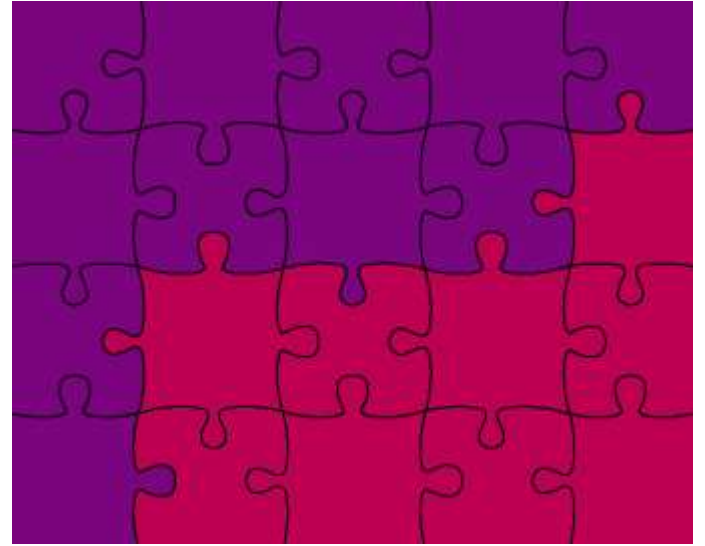
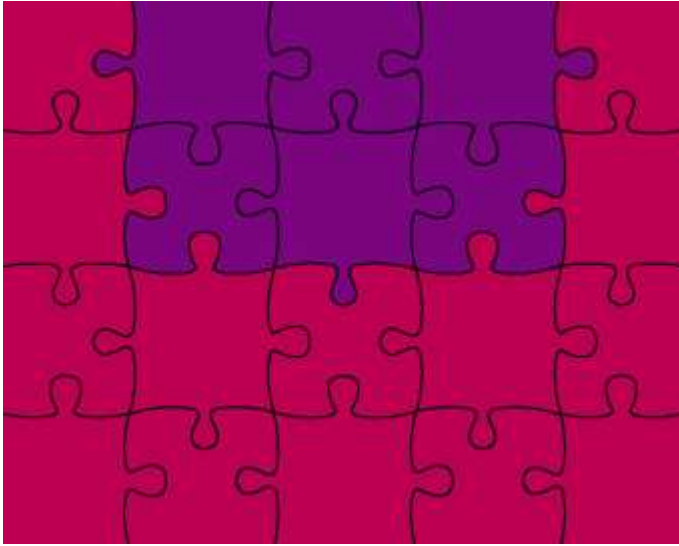
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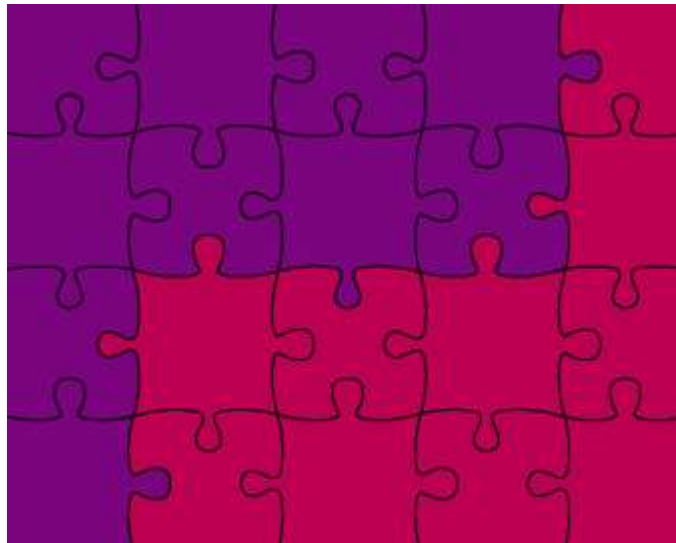
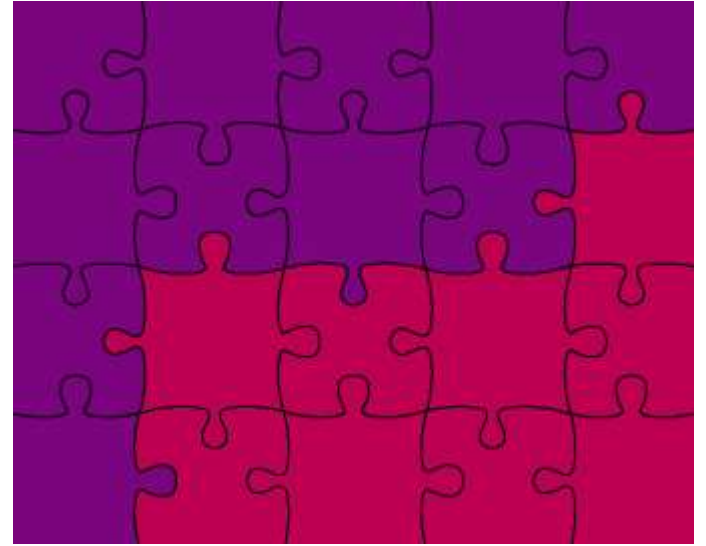
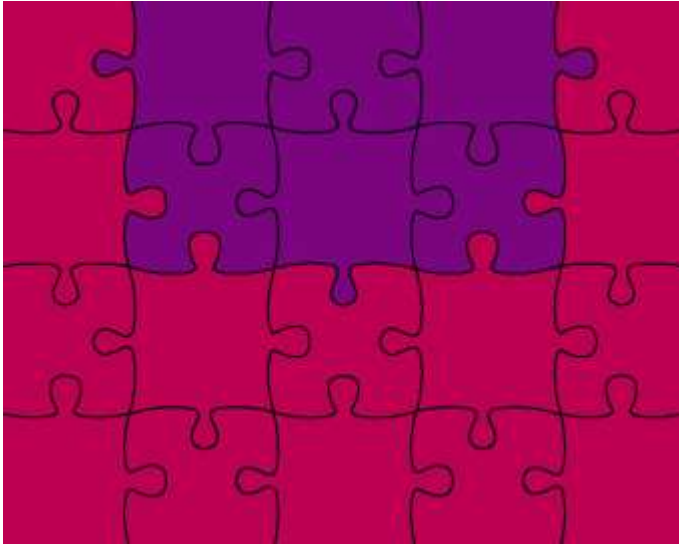
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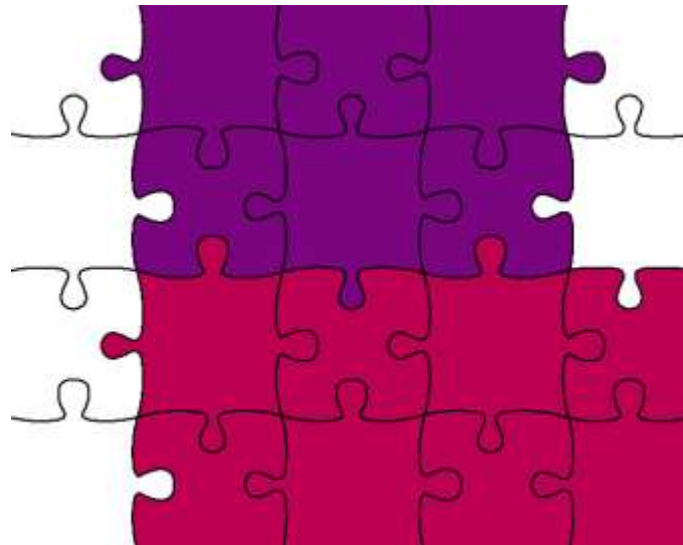
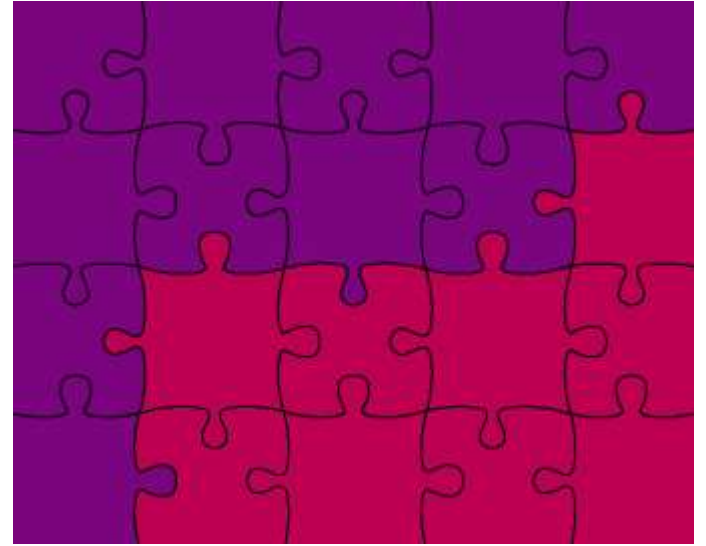
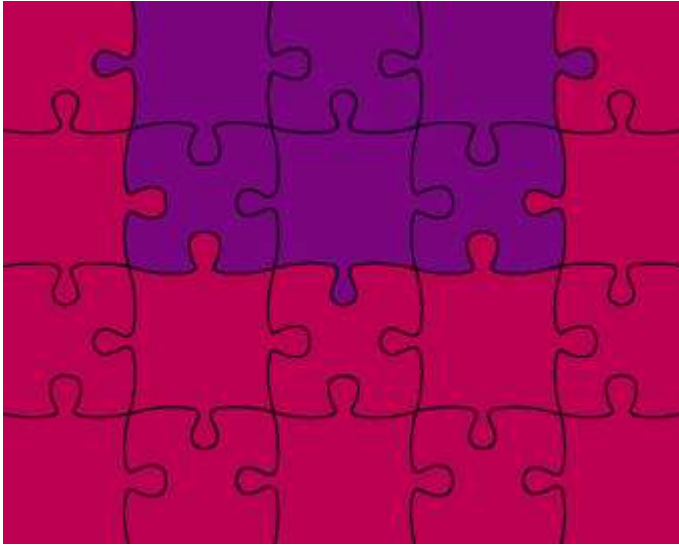
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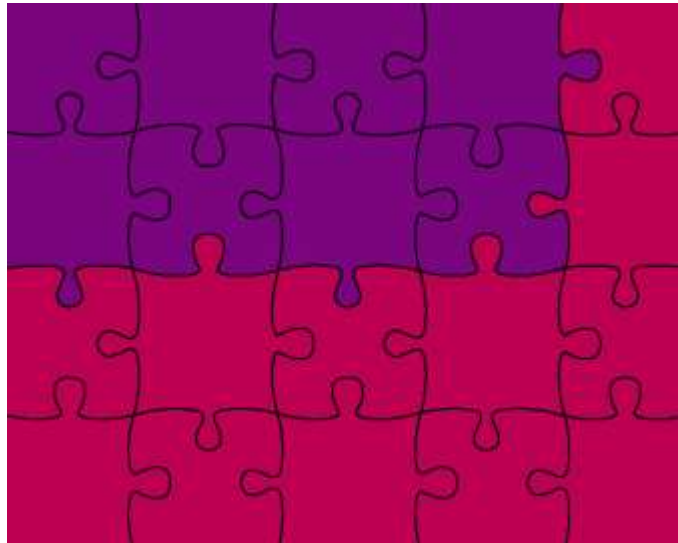
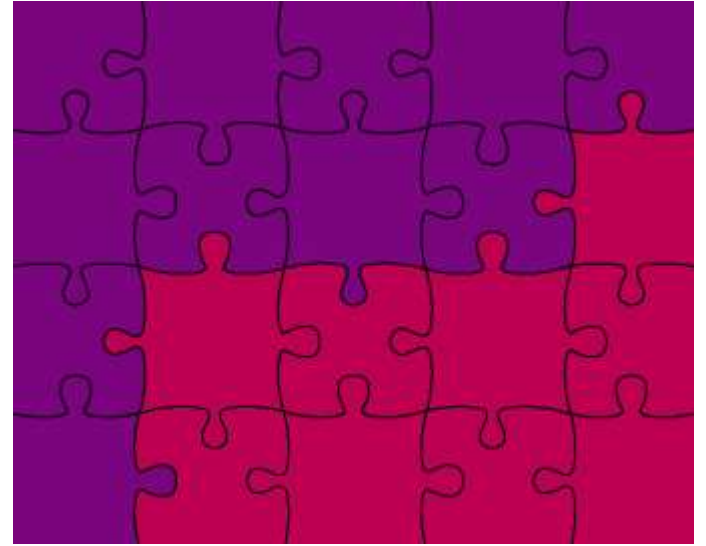
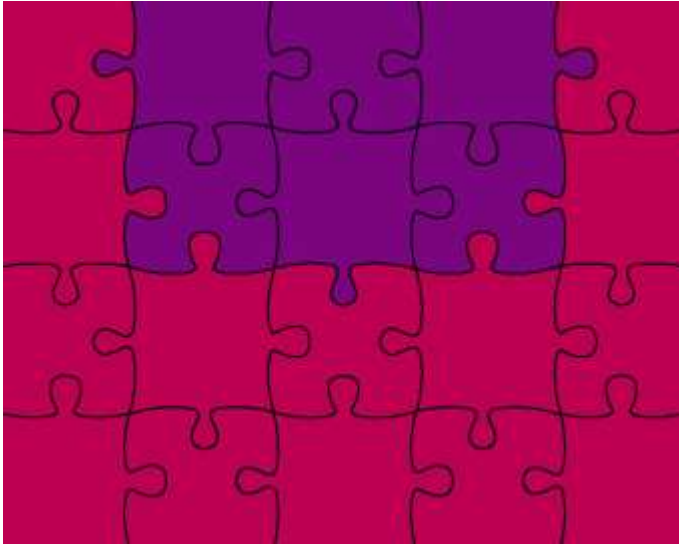
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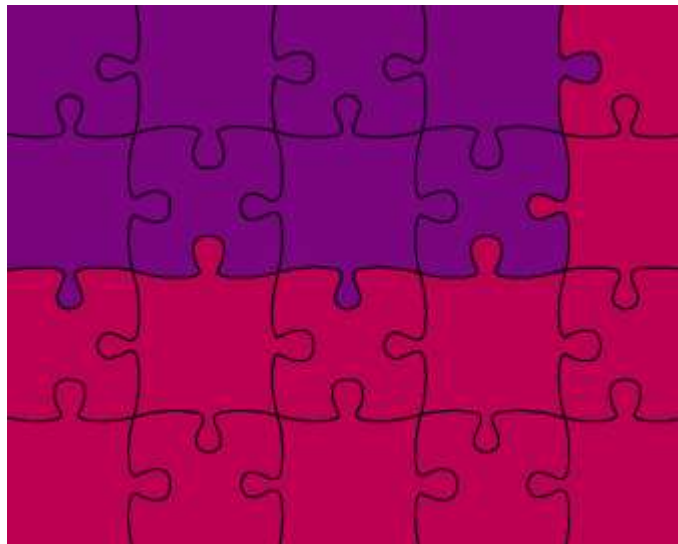
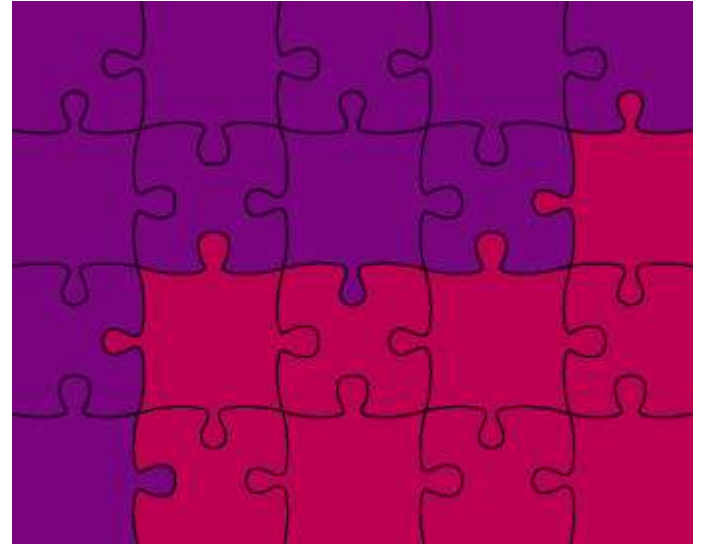
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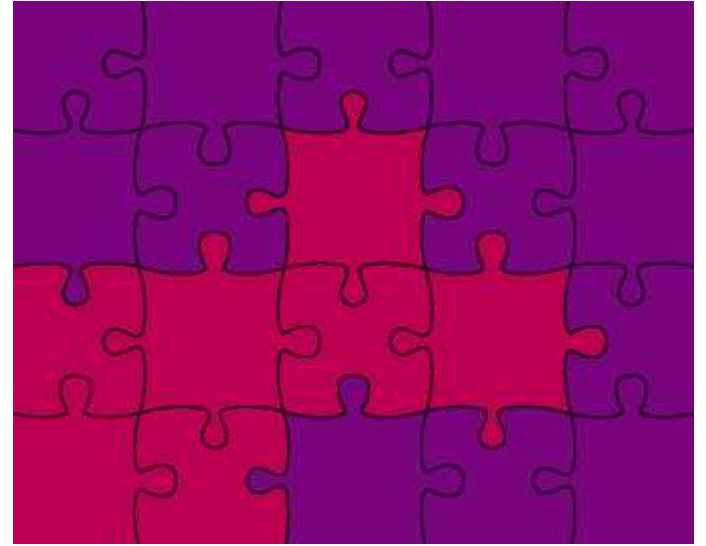
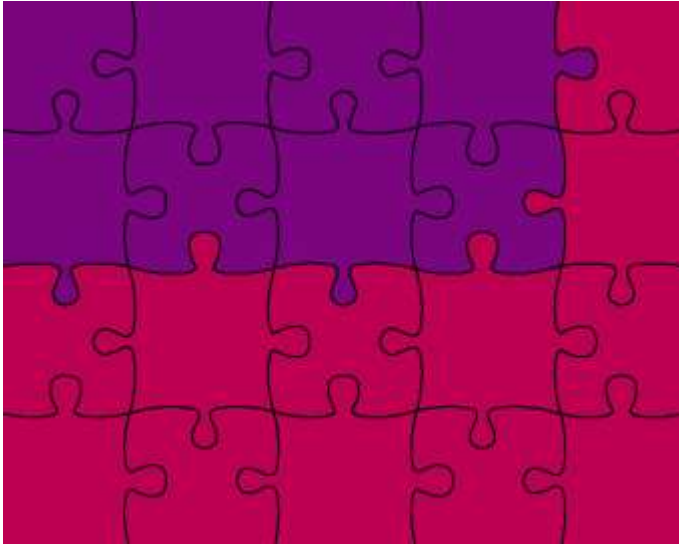
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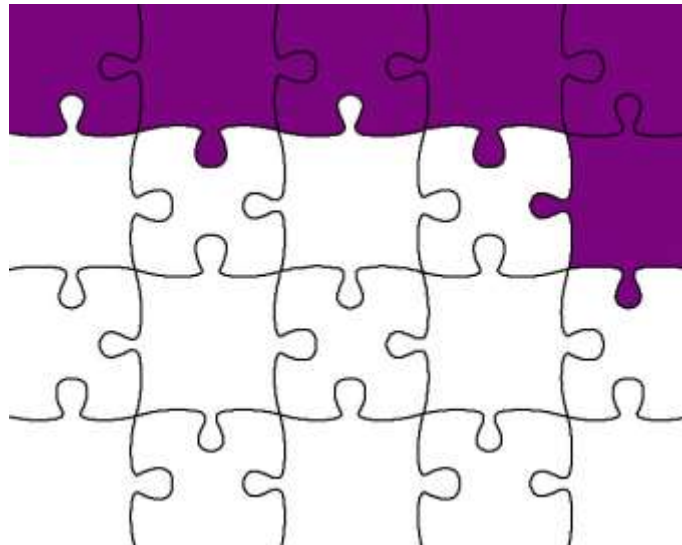
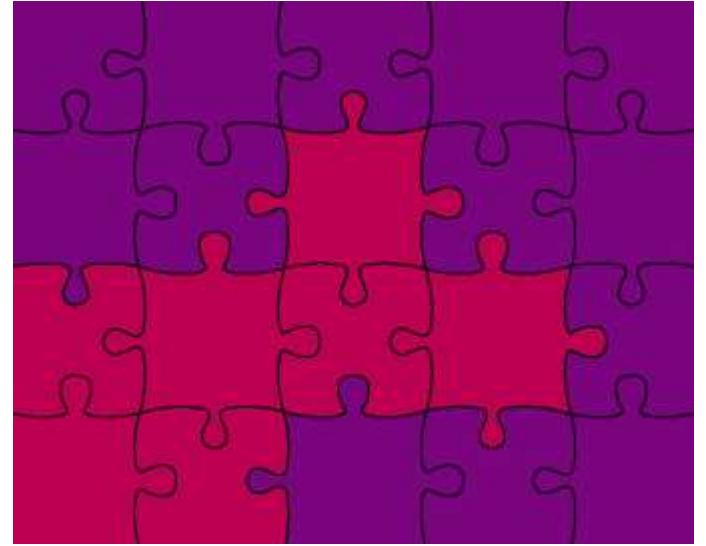
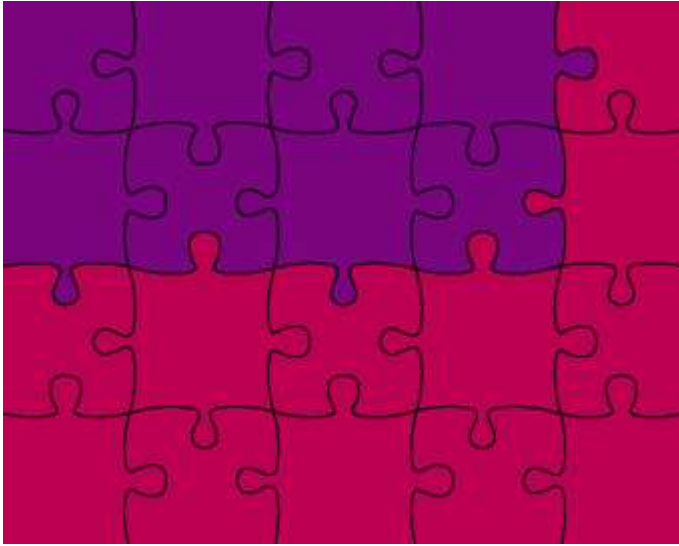
Mejora de la población



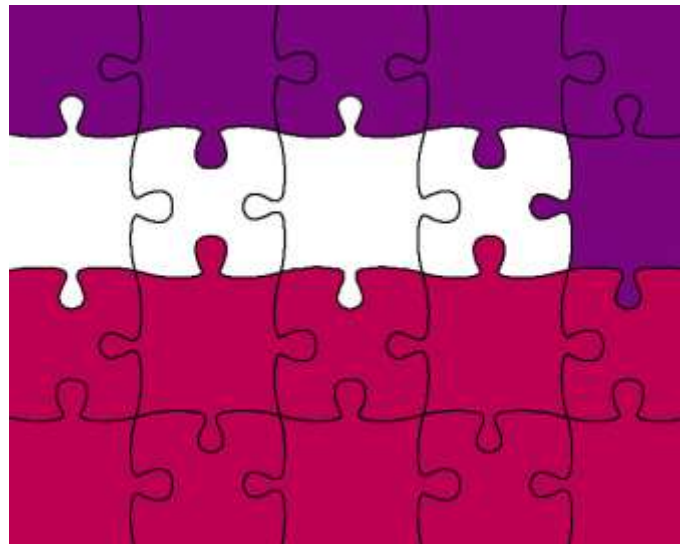
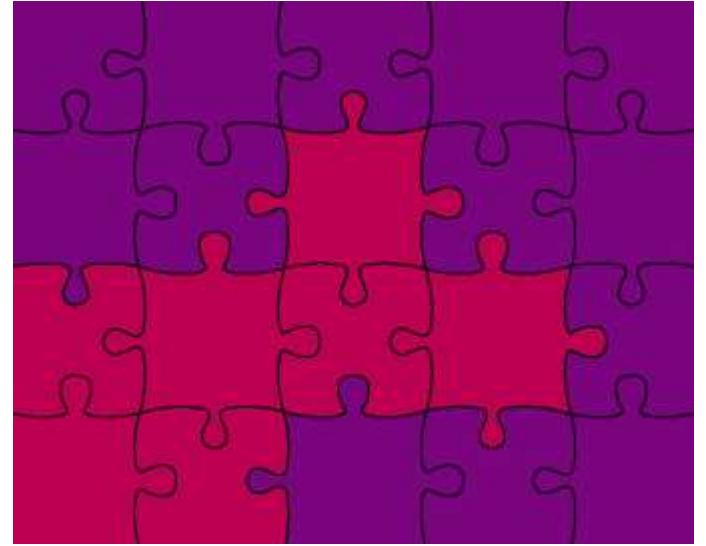
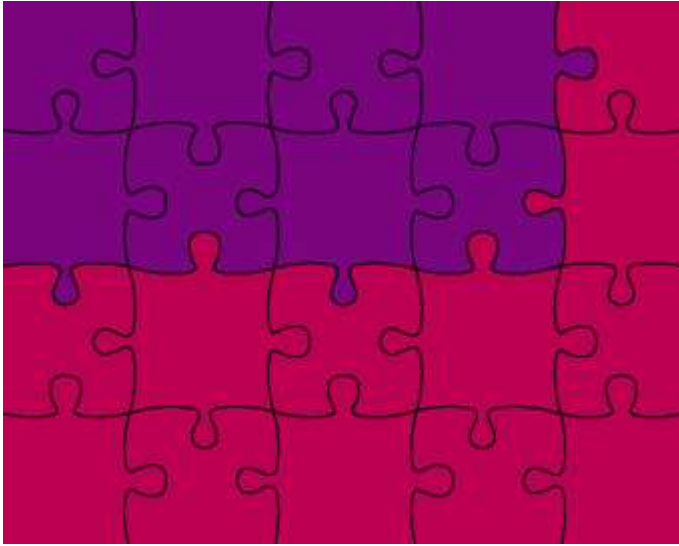
Soluciones aleatorias



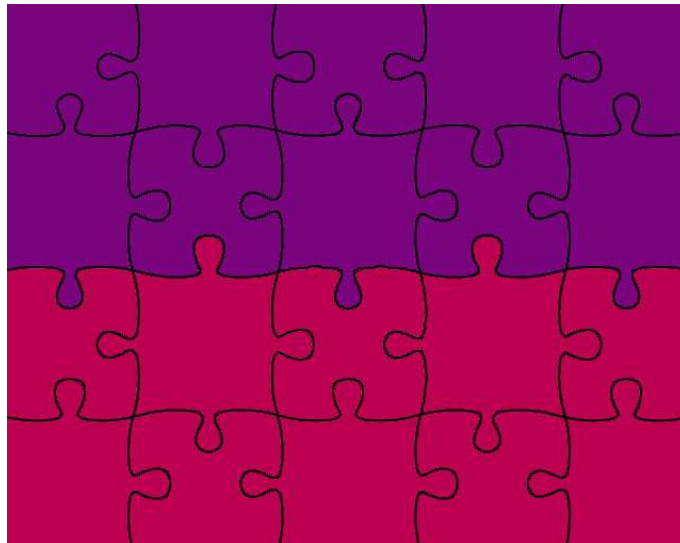
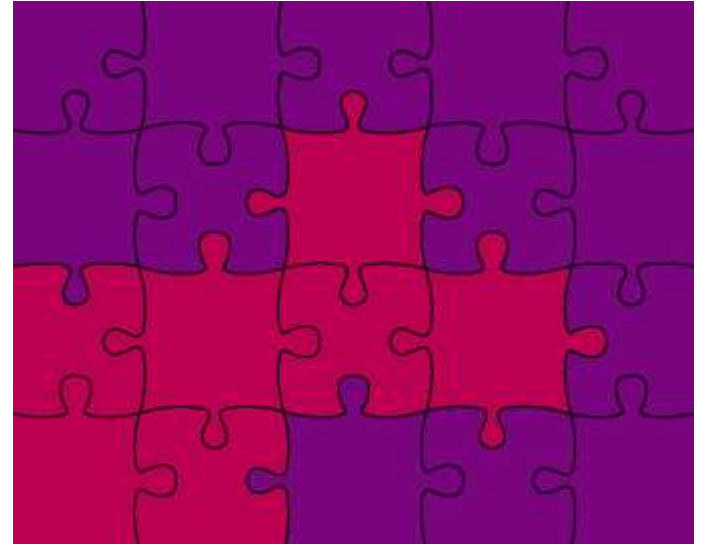
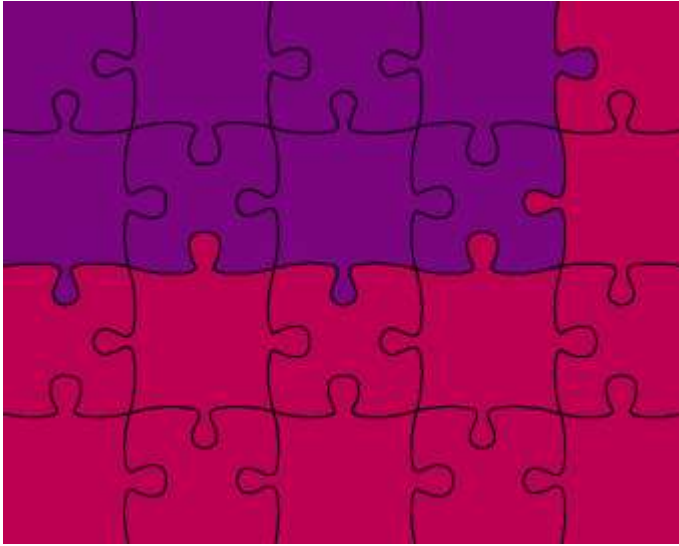
Combina soluciones



Combina soluciones



Aceptación - Rechazo



Técnicas heurísticas

Búsqueda local

Algoritmo poblacional

- No existe evidencia de una estrategia “superior”.
- Los algoritmos propuestos en diferentes países incluyen ambas estrategias.
- Los resultados dependen de:
 - La dificultad del problema
 - La especialización del algoritmo.

GRACIAS POR SU
ATENCIÓN
